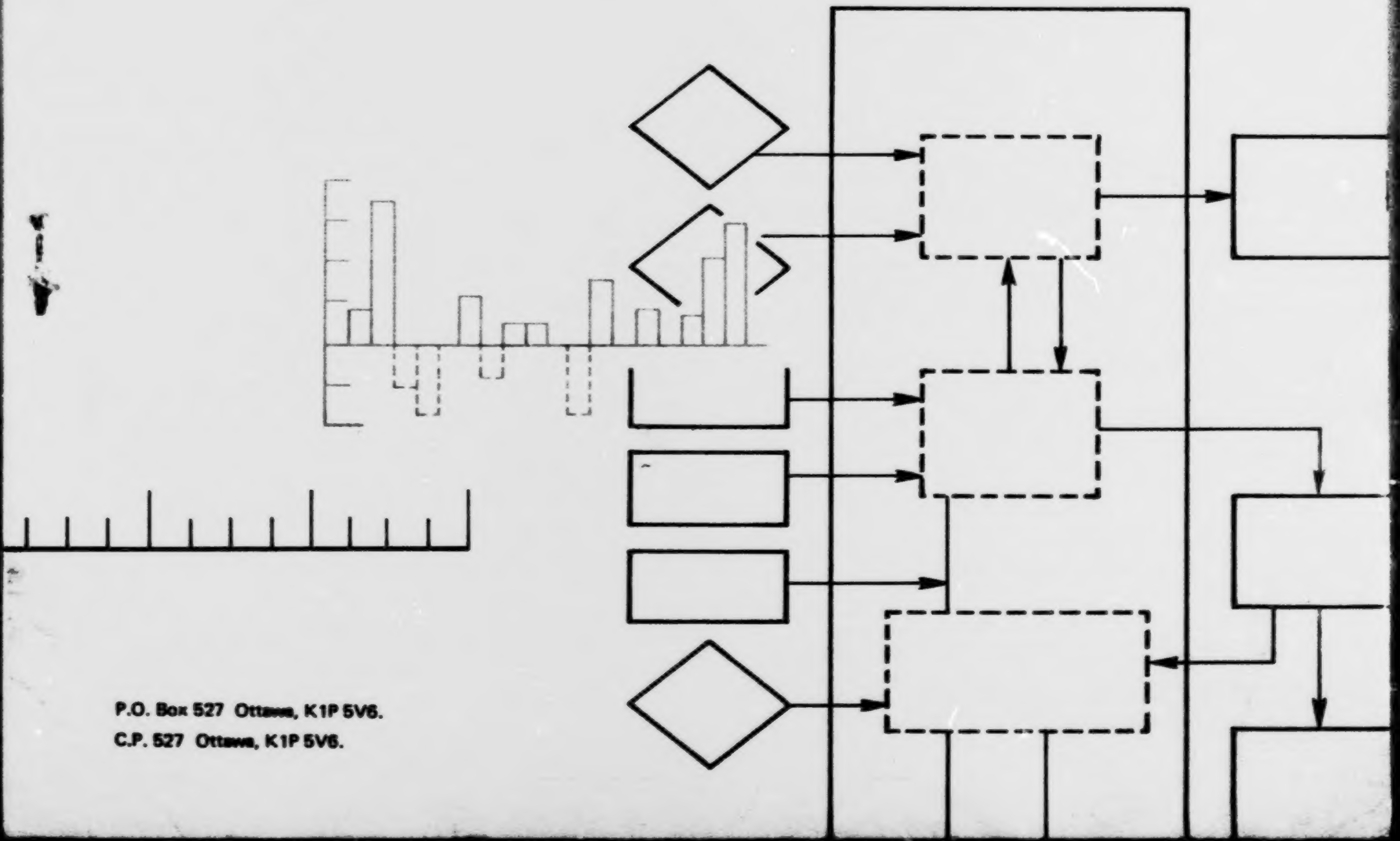
A paper prepared for the
Economic Council of Canada

Un document préparé pour le
Conseil économique du Canada



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DISCUSSION PAPER NO. 239

Governments and the Residential Mortgage Market I: A Normative Analysis

by George Fallis

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ISSN-0225-8013

September 1983

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RÉSUMÉ

Le présent document, ainsi qu'un autre de la même série intitulé Governments and the Residential Mortgage Market II: Programs and Evaluation, traitent de l'intervention de l'État sur le marché des hypothèques résidentielles. Ce document met en place un cadre d'analyse normatif et présente des recommendations au sujet du rôle de l'État dans le marché hypothécaire résidentiel. L'autre document décrit la participation effective des gouvernements fédéral et provinciaux dans ce domaine et la met en regard des recommendations du présent rapport.

Le cadre normatif adopté ici est celui de l'économie du bien-être. Nous supposons que les gouvernements cherchent à réaliser une répartition efficace et équitable des ressources ou, plus généralement, à maximiser une fonction de bien-être social. Rappelant les théorèmes qui sous-tendent l'économie du bien-être, l'auteur soutient qu'il serait possible d'atteindre au maximum de bien-être social sans l'aide d'aucun programme gouvernemental, pourvu que huit conditions soient remplies, soit : (i) qu'il existe des marchés compétitifs, mais (ii) pas de biens publics; (iii) que le climat économique ne suscite aucune incertitude; (iv) qu'il n'existe pas d'externalités d'ordre technique ni (v) de biens dont la consommation soit encouragée par la société ou par l'État ; (vi) que le partage de la propriété des facteurs permette aux ménages de se procurer les biens de consommation qui leur sont destinés, tout en

jouissant du maximum de bien-être social : (vii) qu'il existe un système de lois et de tribunaux capable d'assurer l'exécution des contrats et (viii) qu'il ne se pose aucun problème de stabilisation macro-économique. Si l'une de ces conditions n'est pas remplie, il devient alors possible pour un gouvernement de relever le niveau du bien-être social. Ce n'est toutefois là qu'une possibilité, car il peut arriver aussi qu'aucun programme public ne puisse y parvenir. Lorsqu'il conçoit ou choisit un programme, l'État cherche toujours à maximiser la fonction de bien-être social.

Ce cadre normatif de l'économie du bien-être est appliqué, dans le présent document, au domaine de l'habitation. Au chapitre 2, chaque point de la liste est examiné pour voir si une intervention gouvernementale serait justifiable. Ainsi, l'auteur se demande si le marché hypothécaire et celui du logement sont concurrentiels au Canada, et quelle est la nature des externalités possibles de la consommation dans ce secteur. Si une intervention paraît justifiée et qu'un programme s'appliquant au marché des hypothèques résidentielles semble possible, l'étude de la question est alors reportée au chapitre 3. Ensuite, neuf autres points sont examinés : la possibilité d'un marché de l'assurance hypothécaire qui ne serait pas compétitif; la discrimination dans l'allocation des prêts hypothécaires; les investissements insuffisants du secteur privé dans les prêts à risque élevé; le refus de crédit de la part des prêteurs privés à cause de renseignements inexacts; les externalités attribuables à la consommation dans le secteur de l'habitation ou les préférences des donateurs; le logement en tant que bien dont la consommation est encouragée par la société ou par l'État; la répartition des revenus, et enfin, la stabilisation de l'économie nationale.

Le chapitre 3 montre comment, dans son désir de maximiser une fonction de bien-être social, l'État devrait concevoir un programme et aussi choisir entre divers projets. Ce chapitre s'efforce de préciser les règles de l'argumentation à employer pour l'étude des programmes publics, et aussi préciser les paramètres critiques qui influent sur le choix des projets. L'auteur conclut que la présence de l'État sur le marché des hypothèques résidentielles est nécessaire, mais que son rôle devrait être celui d'un superviseur, ainsi que d'un participant à certaines activités particulières restreintes, plutôt que d'un important intermédiaire financier. L'assurance hypothécaire devrait se poursuivre dans le secteur public ou céder la place à la réassurance des hypothèques privées. Des prêts hypothécaires publics devraient être disponibles lorsque des emprunteurs ne peuvent obtenir de crédits parce que les prêteurs du secteur privé sont incapables de regrouper des prêts à risque élevé ou qu'ils disposent de renseignements inexacts. Il serait, cependant, plus important encore d'examiner minutieusement les problèmes de ces emprunteurs. Des prêts hypothécaires du secteur public pourraient aussi être consentis dans le cadre d'un programme d'aide à la rénovation des maisons, afin d'accroître la consommation dans le secteur du logement, ou encore être intégrés à une politique budgétaire et monétaire optimale destinée à stabiliser l'économie nationale.

ABSTRACT

The purpose of this and a companion discussion paper - Governments and the Residential Mortgage Market II: Programs and Evaluation - is to examine government involvement in residential mortgage markets. This discussion paper sets out a normative framework for analysis and develops recommendations about what the role of government should be in residential mortgage markets. The companion describes the actual involvement of the federal and provincial governments in Canada and compares their involvement with the recommendations of this paper.

The normative framework adopted here is that of welfare economics. It is assumed that governments seek an efficient and an equitable allocation of resources or, more generally, seek to maximize the social welfare function. Alluding to the fundamental theorems of welfare economics, it is argued that the maximum of the social welfare function can be achieved without any government programs provided that a list of eight conditions is fulfilled. The eight conditions are: (i) there are competitive markets; (ii) there are no public goods; (iii) there is perfect certainty; (iv) there are no technological externalities; (v) there are no merit goods; (vi) the distribution of factor ownership permits households to acquire the consumption bundle assigned them at the social welfare maximum; (vii) there is a system of law and courts for the enforcement of contracts and (viii) there are no macroeconomic stabilization problems. If one of these conditions

does not hold, there exists the possibility that a government intervention can raise the level of social welfare. However, it is only a possibility; it may be that no government program can increase social welfare. When designing or choosing a program, the government acts to maximize the social welfare function.

This normative framework of welfare economics is applied in this discussion paper to housing matters. In Chapter 2 each item on the list is examined to see whether a government intervention might be warranted. For example, it is asked whether mortgage and housing markets are competitive in Canada, and what is the nature of any externality from housing consumption? If an intervention seems warranted and a program relating to the residential mortgage market seems possible as a response, the item is set aside for further study in Chapter 3. Nine items are dealt with further in Chapter 3: the possibility of a non-competitive mortgage insurance market; discrimination in mortgage lending; private underinvestment in high risk loans; denial of credit by private lenders because of incorrect information; externalities from housing consumption or donor preferences; housing as a merit good; income distribution; and stabilization of the national economy.

Chapter 3 sets out how the government should design a program and choose between programs within the context of maximizing the social welfare function. It attempts to specify the grammar of the argument to be used in analysing government programs and to identify the critical parameters influencing the choice of

programs. The analysis concludes that a government presence in residential mortgage markets is required but the role should be of an overseer and participant in certain specific, limited circumstances rather than the role of a major financial intermediary. Public mortgage insurance should be continued or public re-insurance of private mortgage insurance be instituted in its place. Public mortgage lending should be available as an instrument to use when there are unserviced borrowers because private lenders cannot pool high risk loans or have incorrect information. But a greater priority is a careful examination of the problems of unserviced borrowers. Public mortgage lending might also be used as part of a renovation assistance program designed to increase housing consumption or as part of an optimal fiscal and monetary policy to stabilize the national economy.

1. INTRODUCTION

This discussion paper and a companion discussion paper - Governments and the Residential Mortgage Market II: Programs and Evaluation (Fallis, 1983b) - were prepared as background studies for the Economic Council of Canada's report on financial markets Intervention and Efficiency (E.C.C., 1982). The purpose of the two discussion papers was to examine government involvement in residential mortgage markets. The work was divided into two parts.

The first part, reported here, uses neoclassical welfare economics to specify the appropriate role for government in residential mortgage markets. In order to specify the appropriate government program, in other words to recommend what the government ought to do, it is necessary to establish what are the objectives of government policy. One must have a normative framework. Is the purpose of government involvement in housing matters to secure an efficient allocation of resources, or to see that all Canadians have decent housing, or to ensure that there is full employment in the construction industry or to raise the probability that swing ridings will return a government member in the next election? It is obvious that the objective will influence the programs to be adopted. In neoclassical welfare economics it is assumed that the government seeks to ensure a Pareto efficient and an equitable allocation of resources, which together may be summarized as saying that the government seeks to maximize the social welfare function. There are a number of reasons why a laissez-faire economy will not achieve the maximum possible level of social welfare and each of these reasons provides a possible justification for government involvement in the economy. This is the normative framework of welfare economics and it is applied to housing matters in Chapter 2 of this paper.

Chapter 2 begins with a brief discussion of the values which underlie the social welfare function. Then each of the possible justifications for government intervention in the economy is outlined and the question is asked whether this justification is relevant in housing matters. In some cases the answer is affirmative and so the next question becomes -- what is the best government program to deal with the problem? Chapter 3 of the discussion paper is addressed to answering that question. The government has many possible instruments at its disposal from regulation to expenditures, and including interventions in the residential mortgage market such as direct mortgage lending or public mortgage insurance. In some cases it will prove that government programs are warranted but they do not imply public involvement in residential mortgage markets. These cases will not be explored in any detail. Here the focus is on the role for government in residential mortgage markets.

The conclusions of Chapters 2 and 3 are suggestions about what government ought to do. It should be remembered that the analysis is conducted with no reference to existing government programs.

The suggestions emerge from what economic theory and available evidence say the role of government should be, given that government seeks to maximize the social welfare function. The companion discussion paper, Governments and the Residential Mortgage Market II: Programs and Evaluation, describes the involvement of the federal and provincial governments in Canada in residential mortgage markets through mortgage lending and mortgage insurance. An overview sketches the evolution of housing programs and documents their size. The major programs at the federal level and in Nova Scotia, Quebec, Ontario and Alberta are described in more detail emphasizing the stated objectives of the programs and the mechanisms of their delivery. Then this involvement of government is evaluated by juxtaposing the recommendations of economic theory of this discussion paper against actual government practice. The theoretical rationale is compared with the stated rationales and the resource allocation which would prevail under an optimal policy is compared with the resource allocation resulting from actual government policy.

In this discussion paper, the issue of what should be the involvement of government in residential mortgage markets is studied using the framework of welfare economics. Many other authors have used a similar approach to examine housing policy (for example Smith (1978) and Task Force (1979) in Canada; and Aaron (1972), and HUD (1976) in the United States). While very much utilizing this previous work, the analysis here is different in a number of ways.

The usual approach has been to list the rationales of welfare economics for housing policy and then to ask whether existing government policies are consistent with them. There has not been much emphasis on using theory to specify an optimal housing program. Chapter 3 attempts to do this more rigorously following the recent optimal taxation literature. The emphasis on optimal instruments proves especially appropriate for examining the role of government in mortgage markets because much of the actual government mortgage lending has not been motivated by a direct concern with the operation of financial markets. Rather the concern is with income distribution or adequate housing consumption, and direct mortgage lending is the chosen instrument of intervention. The public policy question is not whether there has been a failure of the financial markets but whether public lending is the best way to achieve an income redistribution or to change housing consumption patterns.

In contrast to much of the literature, the criterion used here to select a government program is whether it yields the greatest possible increase in the social welfare function not whether it yields a Pareto optimal allocation of resources. There are several reasons for the choice. Strictly speaking it is not possible to separate efficiency and distribution in assessing whether a change is an improvement. Public support for housing programs arises in part because of caring whether others consume enough housing, but also of caring about the distribution of income. This jointness is central to all housing issues.

Finally, use of the social welfare function permits assessing very different sorts of programs -- such as programs to raise the housing consumption of the poor and programs to shield housing construction from macroeconomic stabilization policies - on the same basis.

This discussion paper does not use the concept of a "credit gap" as a rationale for government intervention, although it is frequently used in the traditional financial markets literature. The meaning of the term has been somewhat unclear, but it seems to be a synonym for market failure in financial markets or the existence of lending which would not occur at the social welfare maximum (see Neufeld (1972)). Here it was felt important to focus on the cause of market failure rather than on evidence of credit gaps. The latter approach has tended to produce research which concludes that a rejected loan application is evidence of market failure, without critically examining why the loan was rejected.

Housing policy in Canada is currently the subject of much debate, after the breakdown of the consensus about the appropriate role for government which existed in the 1950's and 1960's. This discussion paper is a contribution to that debate. This application of welfare economics does not result in a firm conclusion about what the optimal role for government is or what the optimal program is. However it does set out a framework for thinking carefully and precisely about the issues. It sets out the grammar of the arguments. Further, it helps to identify the critical parameters influencing the choice of government programs and to identify where further research, both theoretical and empirical, would contribute to the development of public policy.

2. ECONOMIC RATIONALE FOR GOVERNMENT INTERVENTION

A critical part of any discussion of the proper role for government in housing matters is to identify the value system which justifies any recommendation. Or stated in another way, it is critical to identify the purpose of government activity. Any recommendation about the role of government will only be accepted if there is agreement with the values which lie behind it. Much of the disagreement in the public debate over housing issues is really a disagreement about what the objectives of government should be. For example, opposition to public housing is often based on the belief that the State should not intervene to ensure all Canadians are decently housed rather than being based on an argument that there are better ways than public housing to ensure all are properly housed.

Unfortunately however, neither economics nor any other science can tell us what is the correct objective for government. Probably the best strategy which can be adopted[1] is to state as clearly as possible at the outset the objectives which have been assumed and then to argue, "if this is the objective, then such-and-such a program is recommended." The subsection following sets out the objectives or values which will be assumed here.

This strategy is not without its problems. It is easy to deliberately, or inadvertently, assume one's own value system. It is easy to be a critic of government by assuming objectives which were not the government's and condemn government programs because they do not achieve your objectives. Similarly it is easy to be an apologist for government policy. The objectives assumed need only be a description of the outcome of the policy, and then automatically the program can be judged a success.[2] While these problems are significant, their importance should not be overstated. Often initial disagreement exists when objectives are stated in an imprecise manner or without due attention to what pursuing them would imply; but after analysis and discussion a consensus can emerge. There is likely widespread agreement on the basic role for Canadian governments in housing matters, and although stated in a technical way the welfare economics approach outlined below is consistent with this basic role.

The Social Welfare Function

In welfare economics it is assumed that governments choose programs in order to maximize the social welfare function. The social welfare function provides a ranking of all resource allocations or states of the world. A resource allocation is defined to include the specification of the way inputs are used, what outputs are produced and who consumes the outputs. The ranking of the social welfare function is based on the utility levels of the individuals in the society and the consumption of each commodity by each individual. The level of social welfare today, tomorrow and on into the future are also of relevance. In broadest terms, the government's problem is to maximize social welfare across present and future generations[3] subject to the given technology, endowment constraints, and the behavior of agents in the economy (1).

(1) maximize: the social welfare function defined across all time periods

Chosing available policy instruments

subject to:
- i) technology
- ii) factor endowments
- iii) behavior of economic agents
- iv) utility functions of households

The nature of the social welfare function will obviously influence the policies which welfare economics will recommend to governments. Within neoclassical economics, the most widely used is a Bergson-Samuelson social welfare function (2), where $U_i(\quad)$ is the utility function of the ith of n households,

(2) $$W = W[U_1\ (x_{11}, \dots x_{1m}), \dots U_n\ (x_{n1}, \dots x_{nm})]$$

x_{ij} is the ith household's consumption of the jth good, and there are m goods, including good one which is leisure. For simplicity any time superscript has been suppressed. Social welfare is a function only of the utility levels of households and household utility is a function of own-consumption of commodities. The function is usually assumed to be Paretian, that is $\frac{\partial W}{\partial U_i} > 0$.

Using a social welfare function of the type in (2) to judge the well-being of society means that a number of values have been implicitly adopted. It implies that the purpose of economic activity is to produce output for consumption because it is output which yields utility. It implies that the individual's preferences are important in determining social welfare, not solely those of some planner or someone who knows better what is good for people. It implies the form of organizing the economy is unimportant, only output is important. The belief that people should interact cooperatively, or that people should interact competitively, has no relevance. Undoubtably many people especially in the Prairie and Maritime provinces, believe that cooperative activity is desirable for its own sake. And finally, the social welfare function implies a standard of justice or fairness. The formulation in (2) does not assume a specific standard but such a function will always involve some standard. The function is the basis for interpersonal comparisons of utility. As a ranking mechanism, it will indicate whether some government program which has raised the utility of some individuals and reduced the utility of others has on balance made society better off. Equation (2) can take many functional forms reflecting differing standards of fairness. The function may simply add the utility levels reflecting a utilitarian philosophy or the function may reflect a strong preference for equality.[4]

This Bergson-Samuelson social welfare function is the most widely used in economics but many other forms are possible. As has been emphasized, the social welfare function defines the objective of government and therefore any form of the function is possible reflecting one's value system or the objectives one has assumed for government. Another form of the social welfare function is relevant in housing, and that is one embodying the idea of a merit good.[5] A merit good is a commodity or service about whose consumption society has collective views. Society collectively believes the consumption of the good to be meritorious. It seems very likely that in Canada housing is viewed as a merit good. Following Pazner (1972), a merit good may be defined more precisely as a good whose consumption contributes to social welfare beyond the utility it yields to whoever consumes it. In (3), commodity k might be housing and is represented as a merit good. Perhaps a restriction should be added to (3)

$$(3)\quad W = W[U_1(x_{11},\ldots x_{1m}),\ldots U_n(x_{n1},\ldots x_{nm}),x_{1k},x_{2k},\ldots,x_{nk}]$$

$$\frac{\partial W}{\partial x_{ik}} > \frac{\partial W}{\partial U_i} \cdot \frac{\partial U_i}{\partial x_{ik}}$$

because it is likely that Canadian socity believes that all Canadians are entitled to some basic minimum quantity of housing but any increases in housing consumption beyond this level do not have merit good characteristics. More formally $\frac{\partial W}{\partial x_{ik}} = \frac{\partial W}{\partial U_i} \cdot \frac{\partial U_i}{\partial x_{ik}}$ when x_{ik} is above the minimum quantity.

This treatment of housing as a merit good is analogous to the treatment of social values about income distribution (or more precisely about the distribution of utility levels). Both are collective values which are codified in the social welfare function. And of course both suffer the problem that science cannot through an appeal to the facts verify which is the correct or true value system. To emphasize the analogy, perhaps the idea of housing as a merit good can be thought of as part of society's notion of equity or justice. Our collective notion of justice is that the distribution of income not be too unequal and that everyone is entitled to a certain basic minimum of life's necessities: housing, food, education, medical care and so on.

Certain housing analysts would argue that there are other values which are important and ought to be reflected in the social welfare function. The social welfare function may not be defined over the entire nation but only over the individuals of one region or province and differ between regions or provinces (for formal discussion see Tresch (1981)). This would imply different policies in different regions. The analysis of this discussion paper does not deal with the issue of which government should implement a policy. The analysis however is applicable to the problem of a provincial government choosing programs to maximize a provincial social welfare function. Some would contend that society cares about the distribution of utility between owners and tenants, or that rural housing or student housing or homeownership among young middle class families have merit good aspects. And many actual government policies appear consistent with such values. This is not the place to argue for one set of values or another, it is simply to acknowledge these other possibilities and to recognize that they will not influence the policy suggestions which emerge here.

In principle, the solution to the government's problem set out in (1) of maximizing social welfare could be found through a number of decisionmaking systems. A central planning authority or a dictator conceivably could solve the problem. The maximum social welfare may also be achieved through a combination of government and private decisionmaking. It can be shown using the theorems of welfare economics[6] that the social optimum can be attained by private decision-making in a free market system if a list of conditions holds: (i) there are competitive markets; (ii) there are no public goods; (iii) there is perfect certainty; (iv) there are no technological externalities; (v) there are no merit goods and (vi) the distribution of factor endowments is such that consumers can buy the consumption bundle consistent with the social optimum. It also must be assumed (vii) that there is a system of law and courts to permit the economy to function. According to these theorems then, there will be no need for government involvement in the economy when these seven conditions hold because the most desirable state of the world according to the assumed value system - the maximum of the social welfare function - will be achieved without government.

However if one of these conditions does not hold then the theorems of welfare economics cannot show that the social welfare maximum is achieved by a laissez-faire economy. There exists the possibility that a government intervention can increase social welfare. The list of seven conditions therefore is a list of seven possible justifications for government to intervene in the economy (within the overall context of maximizing the social welfare function). The first step in any normative economic analysis of government is to identify which item, if any, on the list of seven conditions might justify a government intervention.

That one of the seven conditions does not hold is not, of course, proof that a government intervention will improve social welfare. There are many reasons why even when a condition is violated private markets may achieve the maximum possible level of social welfare. It may be that private markets have already overcome the problem. For example, private negotiation may achieve the optimum allocation even in the presence of an externality as outlined by Coase (1960). Or it may be that no instrument is available to government to correct the problem; or the costs of acquiring the information to design a program and the costs of administering the program are greater than the costs of the initial problem. Or it may be that given the lags and inefficiencies of public decisionmaking that well-intentioned intervention may actually make things worse. Thus the list of seven conditions is a list of necessary but not of sufficient conditions for government involvement in the economy.

A normative analysis of the government's role in residential mortgage markets, using this framework of welfare economics, can be thought of in two steps. The first is to consider whether any of the seven conditions do not hold in matters relating to housing. The remainder of this chapter is given over to consideration of each of the conditions in turn. For example, it will be asked whether residential mortgage markets or new housing markets are competitive and available empirical evidence for Canada will be weighed in an attempt to give an answer. If the evidence suggests that there is a justification for government intervention, the second step is to consider whether an intervention will improve things and, if so, to design the optimal instrument of intervention. Chapter 3 considers in detail the design of the instrument where intervention seems warranted. Because this discussion paper focuses on involvement in residential mortgage markets, only cases where it seems likely that public mortgage lending or public mortgage insurance would be a proper response will be considered in detail.

A further justification for government intervention in the economy - to ensure full employment, stable prices and real income growth - is usually not considered in the framework of welfare economics. The rationale for intervention, however, is broadly the same. Unemployment is undesirable because the lost output means reduced individual utility levels and hence social welfare. Inflation is undesirable because of the social welfare losses as a result of income redistribution or real resource reallocations or reduced real levels of production. Growth is desirable if reducing present consumption to increase future consumption increases social welfare. The criterion for judging the world is social welfare defined over the current and future periods. This, though, is not explicit in much macroeconomic analysis in which a more critical issue is to discover how government instruments influence the target variable such as inflation. But, the ultimate goal of macroeconomic policy can be seen as the maximization of social welfare and the optimal policy will be that which yields the highest social welfare. Thus, macroeconomic interventions can be assessed on the same basis as those to deal with externalities or income distribution. This is important because mortgage market interventions have been motivated by a broad range of concerns including stabilization. Thus, stabilization problems[7] may be considered an eighth necessary condition for government intervention.

Competitive Markets

The assertion that private markets will generate the social welfare maximum assumes that these markets exist, are perfectly competitive and equilibrating.[8] Under perfect competition all participants accept the market price believing that their behavior can have no appreciable affect on price. This is usually the case if there are many buyers and many sellers, each dealing in a small percentage of the total quantity exchanged. The economy will produce the optimal quantity of housing if all markets are competitive. In dealing with housing matters there are a number of markets which must be examined including the input markets of mortgage finance, residential construction labour, building materials and land and the output markets in existing housing and new housing. Each market will be discussed, considering whether in Canada there is evidence that lack of competition might prevent achievement of the social welfare maximum. Recent work in industrial organization (see Baumol (1982) and Bailey and Friedlaender (1982) for surveys and references) has argued that non-competitive markets, even oligopolies and monopolies, may have prices and output levels consistent with the social welfare maximum if the markets are contestable. In essence, a contestable market is one in which entry and exit are costless, so any above normal profits are vulnerable to a hit-and-run entrant. Thus non-competitive markets must be studied to determine whether they are contestable before a government intervention can be recommended.

Of particular importance to this monograph is the mortgage market. When mortgage markets are competitive the mortgage rate of interest and other terms of the loan are set by the market so that the supply and demand for mortgage funds are equal. All borrowers have free access to the market and all obtain the same terms except to compensate for differences in riskiness. All lenders may enter and leave the market according to their assessment of the relative attractiveness of mortgages compared to alternative investments (Jaffee, 1975). All borrowers and lenders act as price takers in the market. There are numerous reasons why the market might not be competitive,[9] most importantly because of a monopolistic financial intermediation sector or because of government regulations governing the operation of financial markets. The latter becomes a problem of the second best: regulations prevent an optimal resource allocation and policies to offset these effects may be called for if the regulation cannot be removed. This and other second best questions are dealt with in a subsequent section of this chapter. Here the primary focus is on the possibility that concentration in the financial intermediation sector has caused the amount of mortgage credit and investment in housing stock to be below their optimal level.

There is little evidence of concentration in the intermediation of Canadian mortgage markets. Mortgages are supplied by banks, trust companies, mortgage loan companies, credit unions, caisses populaires, and life insurance companies. No single lender or even type of lender dominates the mortgage market (CMHC, 1981a, Tables 37 and 38). As well, much mortgage lending is done directly between individuals or intermediated by real estate agents or lawyers (Rowe, 1981). There are few barriers to entry into the field, although there are significant regulatory barriers to entering banking (E.C.C., 1976). There has been no evidence presented that mortgage lending yielded higher returns than other activities, although at certain times banks have enjoyed higher after-tax returns to shareholders' equity than other sectors (E.C.C., 1976, 40). Thus there seems no reason to conclude that mortgage lending is concentrated, a conclusion supported by the Royal Commission on Corporate Concentration (Canada, 1978).

It is sometimes argued that, although not concentrated, Canadian mortgage markets do not have all the characteristics of perfectly competitive markets. It is said that mortgage markets do not equilibrate 'properly' because mortgage interest rates lag the adjustment of other security yields and mortgage lending is a residual to be squeezed when the demand for loanable funds increases. Public mortgage lending to deal with this lagged adjustment is then often recommended. There are a number of problems with this reasoning. The mortgage rate of interest is the most important component in the 'price' of mortgage credit, but there are other components as well. The loan-to-value ratio, term and amortization period all vary and influence the cash flow of the mortgage and the risk. Other fees are also often paid on initiation of a mortgage. Only by considering all components could the price of mortgage credit be established and then compared with the adjustments in the yields of other standardized securities. Furthermore the efficient, or at least competitive, adjustment of all terms of a mortgage to changing credit market conditions would have to be established before it could be proven that the existing pattern of adjustment was evidence of market failure. It may be that excess demand for mortgages at the announced terms is an efficient response to imperfect information (see the subsequent section on uncertainty). In a similar vein, some of the lag is due to the special institutional arrangements surrounding mortgage lending such as forward commitments (see Smith (1974, 76) for further discussion) which may be efficient. Certainly, the mortgage market did not equilibrate when there were ceilings on the mortgage rate charged on NHA insured loans but these were lifted in 1969 and now the rate is market determined. At present the mortgage market is well integrated into the system of capital markets and there does not appear to be a need for public policies to deal with adjustment problems.[10]

The other allegation of non-competitive behavior sometimes heard is that mortgage lenders discriminate against such groups such as women, immigrants, households with several income earners, owners of inner city housing and owners of older housing not conforming to current zoning laws and building standards. This is exceedingly difficult to prove because a rejected loan application at current mortgage terms is not proof of discrimination. It is likely these classes of borrowers are riskier and it is more expensive to acquire information about their credit worthiness, because few of this class have borrowed previously. It is quite possible that at an interest rate reflecting costs and risks, the loan demand would disappear. However, the allegations are made often enough to merit inclusion of discrimination on the short list of grounds for possible government action in mortgage markets, to be taken up again in the next chapter.

A related input market which must be scrutinized is the mortgage insurance market. Originally in Canada, mortgage insurance was publicly provided and later private insurers emerged. Once there were three private insurers but over time these have all merged into one company. The question to be considered here is: if public involvement ceased would[11] the private mortgage insurance market be competitive? The fact of there being only one remaining company clearly suggests the market would not be competitive, although one must also determine whether the market is contestable. However, it has been argued that the current situation of one private company is not indicative of what would prevail without government insurance because it came about through CMHC setting its insurance premia too low and through an abnormally sharp contraction in the total volume of mortgage insurance. However, there are reasons to argue that the industry would be highly concentrated. There are likely scale economies in one city or market area to assessing and processing applications and in portfolio management. At the same time, an insurer would try to diversify across cities in order to reduce risk under the assumption that many factors determining default rates are uncorrelated between cities. It may be impossible to answer how many firms would exist in a purely private market, but the market would surely be very concentrated. It is also difficult to establish how contestable the market would be. The need for a firm to diversify across cities suggests new entrants might not be able to match the production conditions of an incumbent. There might be the possibility of premia above marginal costs. This provides a second area where public intervention might be required to achieve the social welfare maximum. It will be analyzed further in Chapter 3.

Of the remaining input markets - labour, materials and land -the land market attracts most attention.[12] It is argued that the ownership of developable land is concentrated. Landowners withhold land, raising prices, raising new housing costs and causing a sub-optimal stock of housing. However, neither economic theory nor the facts support the conclusion that concentrated ownership has distorted resource allocation. Markusen and Scheffman (1977) showed that not even monopoly ownership of vacant land on a city's periphery will necessarily result in a slower rate of development than widely diversified land ownership. A monopolist may even develop land more rapidly, when it is recognized that a low current rate of development (and so higher current prices) implies that the returns on some of its inventory must be postponed until a future period. The Federal-Provincial Land Task Force (1978) found that in 13 metropolitan areas which it examined land ownership was not sufficiently concentrated to justify the monopoly developer argument. There do not appear to be grounds for public intervention.

The possibility of non-competitive behavior in output markets must also be addressed. In the output market, households seeking housing services are supplied by owners of the existing stock and owners (builders) of the stock constructed in that period. The housing services may be acquired through rental or ownership, and of course many households, as owners who do not sell their houses, are suppliers to themselves. For many purposes it is useful to consider this as one single market for housing services with no distinction between new and old houses and assuming housing tenure is a portfolio rather than consumption choice. And although this is a theoretical abstraction, it is a good starting point for analysis (see Olsen (1969) for a presentation of the approach). Too often rental and ownership markets are analysed separately, forgetting that housing acquired under the two forms of tenure are substitutes and that both new and existing stock can move quite easily between the markets. Sometimes the new and existing markets are considered separately, forgetting that the commodities are very close substitutes.

Regardless of the approach taken, a lack of competition in the output market is always felt to arise from concentration on the supply side rather than the demand side. It is sometimes popularly asserted, considering the rental market in isolation, that big development companies are oligopolists holding a large fraction of the total rental stock and raising rents. This is simply untrue. The rental stock is widely held. A more frequent assertion is that the development and building industry is concentrated, resulting in a restriction of new supply and prices of new houses above those consistent with economic efficiency. Here there is some evidence of concentration. In some metropolitan areas, over fifty per cent of the new supply is provided by the four largest firms (for Toronto data, see Muller (1978)). The concentration ratio is sensitive to the chosen geographical boundaries of the market area. A single municipality within a large metropolitan area can show a much higher ratio, but the relevant market area is that where houses are close substitutes and will likely extend beyond the single municipality (by confining the area, of course, concentration ratios can be pushed to 100 per cent). However even if concentration were significant, it does not necessarily follow that supply will be restricted to raise price. Again it must be remembered that the existing stock is a very close substitute for new construction and even a monopoly supplier would only control two to four per cent of the total housing stock. (A similar argument holds for concentrated vacant land ownership, see Markusen and Scheffman (1977)). There are no significant economies of scale in residential construction and few other barriers to entry. Monopoly profits in any geographical area would no doubt attract new entrants. Canadian developers and builders have proven mobile between cities. There does not seem to be resource misallocation in the output market due to non-competitive markets. The Federal-Provincial Land Task Force (1978) agreed with this assessment, but cautioned that there exists the potential for substantially increased concentration which should be monitored.

It is worth noting that claims of monopoly restrictions were heard frequently during the boom in housing prices between 1973 and 1975 but seldom when prices rose less rapidly than inflation in the succeeding three years. Presumably monopoly returns still existed. Most analysts now argue the boom was caused by an unanticipated increase in demand rather than an exercise of monopoly power (Scheffman, 1978).

In public discussion of housing issues, it has often been claimed that monopolies or oligopolies in various sectors have driven up house prices and there have been demands for government action to redress things. This study of the input and output markets rejects the claim. Perhaps it is simply that every buyer wants a lower price and allegations of monopoly are a convenient argument to support government subsidies. The two issues which do warrant further exploration are the possibility of discrimination in mortgage lending and of a non-competitive insurance market. In Chapter Three, the optimal instruments of intervention are considered.

Uncertainty

The theorems which prove that private markets generate the social optimum use models which assume perfect certainty. Consumers and producers know with certainty all present and future factors relevant to their decisions - both know present and future prices; consumers know all characteristics of commodities they purchase, whether they would be employed or unemployed, sick or healthy; producers know the output which would be produced from use of certain input combinations and so on. Obviously this is not the actual situation. There is not certainty but uncertainty.[13] Stated in an alternative but related way, there is not perfect information. Information becomes a commodity which is costly to produce and may be unequally distributed among agents in the economy.

The basic framework for the analysis of uncertainty is provided by Arrow (1971). There he showed that the existence of uncertainty does not necessarily imply that private markets will not achieve the social welfare maximum. If it is assumed that the future can be characterized as a finite number of states of the world, that individuals have subjective probabilities (which sum to unity) attached to the occurrence of each state of the world and that the individual knows what his endowments will yield him in each state of the world, then resource allocation will be Pareto optimal if individuals maximize expected utility faced with markets for claims to products or factors in each state of the world. With uncertainty, a full set of contingency markets ensures efficiency; and risk will be optimally allocated.

The real world, however, does not offer a full set of contingency markets. A number of institutional arrangements, in particular insurance and securities markets, provide some mechanisms for shifting of risk. However, a complete set of insurance markets has not evolved for a number of reasons.

Potential insurers or those who would buy insurance may have wrong information. There may be high transactions costs to establishing a market with few participants. Alternatively, information may be unequally distributed between a potential insurer and client, which gives rise to the problems of moral hazard and adverse selection. Moral hazard arises when the activities of the insured affect the liabilities of the insurance company and the company does not have complete information about this behavior. With insurance, the customer takes fewer precautions and the insured-against outcome increases. The insured-against outcome increases so much that the premiums imply a lower expected utility with insurance than without. No market will exist. Adverse selection arises when individuals know their own riskiness better than the insurance company. If there are individuals of many degrees of riskiness eventually only insurance for the most risky will exist. "It is only too clear that the shifting of risk in the real world is incomplete" (Arrow, 1971, 148).

Thus, in the world of uncertainty, the proof that the social welfare maximum will be attained by private markets does not hold and an examination is warranted to see whether government intervention might improve social welfare. The examination usually focuses on four areas: investment, innovation, credit rationing and insurance markets. These will each be discussed, first generally and then in the specific context of housing matters. As before, the objective is to establish whether a mortgage market intervention might increase social welfare. This section identifies possible areas for intervention and Chapter 3 explores the best instrument.

The existence of uncertainty creates a number of problems in determining the socially optimal levels of public and private investment. One controversy deals with whether the social discount rate used in evaluating public sector investments should include a risk premium. Arrow and Lind (1970) have argued yes while Hirshleifer (1965) disagreed. While important for billions of dollars of public investment, this controversy is less relevant here. Depending on the point of view adopted, the government may have overinvested or underinvested in infrastructure for housing such as roads, sewers, water mains, and purification plants. But in any event the appropriate redress is to correct the social discount rate rather than intervene in residential mortgage markets. Of more relevance is the possibility of private underinvestment in risky projects. Governments through risk pooling can reduce the social risk and through risk spreading can reduce the cost of risk (Arrow and Lind, 1970). Socially optimal investment achieved through government assistance will involve riskier projects than would be undertaken by private decisionmakers. Mayshar (1977) has argued that imperfect capital markets and income taxation can also imply suboptimal private investment. However, private underinvestment in housing because of risk is not likely significant because the risks are not especially high. The time lags are relatively short, the risks mainly restricted to price variability, and there is little technological uncertainty. Furthermore, the risk spreading and risk pooling which could be done by government can also be achieved by a large firm. Local, regional and provincial governments increased the level of uncertainty because of land use regulation in the 1970's, although it is not clear whether this resulted in reduced social welfare because some benefits did accrue from the regulation. Governments now seem more aware of this issue and have tried to incorporate it into their decision-making.

It is sometimes claimed that certain borrowers are not served by the mortgage market, such as those in northern communities, or households with several earners, or owners of certain types of housing and that this is a case of lending institutions under-supplying funds to high risk borrowers. Another explanation for the fact that these potential borrowers cannot obtain loans is that lenders have incorrect information about the riskiness of the loans. In both cases, there exists the possibility that government intervention will increase social welfare. However there are other explanations for the loan refusals which do not call for public response. A very possible reason that such borrowers have not been serviced is that demand in fact does not exist with the appropriate risk (or insurance) premium. Or, information on such borrowers is costly to obtain because of a-typical employment patterns or unique housing market conditions and again with proper pricing demand would not exist. Existing research cannot choose from among the explanations and therefore the problem of unserved borrowers is included as a possible rationale for public policy to be explored further in Chapter 3.

A second problem caused by uncertainty relates to innovation. Information and new technologies are products yielded by using resources. The private market will likely underallocate resources to innovation for several reasons. The cost of disseminating information is very low so that once produced, efficiency dictates that the information be freely distributed; but this reduces the incentive for any entrepreneur to invest in innovation. Further, the investment is highly risky. Private agents are unlikely to invest the optimal amount and moral hazard would prevent insurance markets from developing. Only large companies with many small projects can undertake the risk pooling and spreading necessary, given attitudes to risk.

This general problem is of some relevance in the housing sector. There may be a role for government to subsidize basic research into mass production building technologies or energy conservation technologies. This might entail public lending, but will not be considered further here because it is more appropriately lumped with a more general treatment of government policy toward research and development and in any event would not likely require mortgage lending.

More germane to this monograph is the problem of new financial instruments in the mortgage market. Changing economic conditions, especially high and uncertain rates of inflation, likely require alterations in the form of the mortgage contract, in the sense that the optimal contract between borrowers and lenders given their risk preferences will be different under different types of uncertainty. Clearly, the standard level payment mortgage contract changes the burden of real payments as inflation rates rise. Other forms of the contract such as variable rate mortgages, graduated payment mortgages or equity participation mortgages offer different characteristics to borrowers and lenders (see Carr and Smith (1983) for a discussion).

The public policy problem is whether sufficient resources are being devoted to developing, researching and marketing new forms of the mortgage contract and whether there is a role for government to change the private outcome. Developing a new financial instrument likely has a low rate of return because it can be so easily copied; however few resources are required to generate a new instrument. At present there are many, many new types of mortgage contract being discussed and the problem does not seem to be underinvestment in innovation. If a problem exists it is more likely one of implementing a new technology because lending under new contractual forms may be highly risky or the information to assess the risk simply unavailable except by actually lending under the new terms. However, private mortgage insurance exists and the risk on new instruments can be pooled and spread. The evidence does not point to a lack of innovation or implementation of new instruments in the mortgage market. Binhammer and Williams (1976, 140) concluded that "the chartered bankers and the trust companies have been especially innovative with respect to participation in the residential mortgage market." Some might have claimed that the mortgage market was slow to offer graduated payment mortgages in the mid 1970's and that this points to a need for government intervention. However, the optimal rate of implementation is hard to determine. Even now when graduated payment mortgages are insurable under the National Housing Act, they have proven to be an unpopular instrument among borrowers and lenders. There does not appear to be a need for public intervention to develop or market new types of mortgage contracts.

A number of authors have argued another result of uncertainty or imperfect information is non-price credit rationing in mortgage markets. Jaffee and Russell (1976) show that if lenders cannot distinguish between high risk and low risk borrowers, rationing of everyone may take place. Fried and Howitt (1980) offer an implicit contract theory of rationing. If lenders are risk neutral with respect to the cost of funds and borrowers risk averse, an implicit contract between borrowers and lenders may be struck under which lenders assume financial risks and borrowers are guaranteed a constant real loan rate but may be rationed out of the market in certain states of the world. Stiglitz and Weiss (1981) argue that the interest rates lenders charge on loans affect the riskiness of a pool of loans through adverse selection and moral hazard. The lender might not make a loan even if a borrower offers to pay more than the market rate because such a loan may have a higher risk and lower expected value than current loans. The three authors' explanations of credit rationing, while differing, all have the same implication; credit rationing is a response to imperfect information and not evidence of resource misallocation. No public sector response is required.[14]

The final issue arising from uncertainty to consider is the provision of mortgage insurance. There are two areas where public intervention sometimes increases social welfare. If households underestimate risks as it is sometimes argued is the case with automobile accidents or injuries on the job (see Rea (1981) for a discussion), compulsory insurance might improve social welfare. This however does not appear relevant in the area of mortgage insurance, although perhaps some argument could be made for compulsory rate change insurance on high ratio, short term mortgage loans. A more important issue is whether private insurance markets will fail to exist. This is usually caused by moral hazard or adverse selection problems. Moral hazard does not appear to be a problem since most factors affecting the probability of default are beyond the borrower's control. Those which are in his control such as household income and housing maintenance imply substantial uncompensated costs to be borne by the borrower if they were manipulated to create a default. Adverse selection does not appear to be a problem at least after restricting eligible borrowers. In fact of course, private mortgage insurance has come into being. It may be that adverse selection is a greater problem among potential borrowers with a-typical employment patterns and mortgage insurance is not provided. However only compulsory public insurance for this class of borrowers would overcome this, an unlikely prospect (although there is compulsory insurance on high ratio loans by banks). Public insurance might be called for if potential insurers wrongly estimate the risks, if the public has a different rate of risk preference, or if there are substantial scale economies in insurance which would tend to lead to monopoly. The first two situations may have existed in the immediate post-war period in Canada when public mortgage insurance was initiated. The third may still exist in Canada. There is presently only one private mortgage insurance company in Canada and a public role may be justified as was discussed in the previous section on non-competitive markets.

The introduction of uncertainty into the analysis obviously forces many changes. Investment must be analysed as more than a problem of intertemporal consumption, investment in innovation becomes important and non-price adjustments are part of the market mechanism. It is less obvious, however, where government action may increase social welfare. This analysis suggests an area warranting further investigation is the problem of high risk, unserviced borrowers, but rejects concern about underinvestment in housing or new financial instruments and about non-price credit rationing as grounds for government intervention.

Technological Externalities

A technological externality exists when the consumption or production decisions of one agent affect the consumption or production opportunities of another directly, rather than through the prices which he faces (Layard and Walters, 1978, 189). The intuitive reason why this may imply a need for government is obvious. The price system is successful in generating the social optimum in cases where private and social costs and benefits are the same. A private decisionmaker acting in his own interests also acts in society's interests. However if there exist technological externalities, the social costs or benefits of an action are not coincident with private costs and are not taken into account by the decisionmaker. More formally, a necessary condition for the social optimum when the output of a good k beneficially affects g individuals is given by equation (4): that the sum of the marginal rates substitution of all affected individuals equals the marginal rate of transformation (the sum of everyone's willingness to pay equals what must be given up).

$$(4) \quad \sum_{i=1}^{g} MRS^{i}_{jk} = MRT_{jk}$$

Private markets, because of free-rider problems, do not offer a mechanism for aggregating this willingness to pay, with the exception of the situation outlined by Coase (1960). If transaction costs are zero, redistribution does not affect marginal values, and property rights are specified, private markets can generate an efficient resource allocation through negotiation to deal with the externality. Furthermore, if the redistribution does not affect social welfare, private markets can also generate a social welfare maximum.

Like uncertainty, externalities are so pervasive in the world that one might be forgiven for wondering whether a theory developed assuming they do not exist has any use as a reference point. However, many are so obviously trivial that they do not influence resource allocation significantly and others are irrelevant because they are inframarginal (Buchanan and Stubblebine, 1962). Nonetheless externalities are one of the most common justifications of government policy. Many are alleged to exist in the housing field. The most important will be considered.

It is often argued that there are externalities from housing consumption, at least up to some consumption level. Increased consumption is held to reduce infectious disease and reduce anti-social behavior through better child rearing and less alienation, both of which benefit society as well as the individual. Certainly poor housing conditions are often highly correlated with disease, crime and social alienation; and housing reformers have used these data to argue for housing subsidies. However careful scientific studies of infectious disease or anti-social behavior holding all other determinants of these things constant except housing consumption in order to isolate its effect are somewhat less common. Rothenberg (1967) and (1976) and Kasl (1976) offer good summaries of the existing literature. There still remains considerable disagreement among readers of this literature on whether these externalities do exist, whether they exist over all housing consumption levels, and the size of the externality. My reading of the literature and my own intuition suggest that there will be externalities up to some rather low level of housing consumption, $\overset{=}{x}_k$. If private decisionmakers choose to consume less than this level of housing services, there is a positive externality with increased consumption and there exists the possibility of public policy to improve social welfare. This housing consumption externality can be formally represented as in (5). The consumption of the kth good, housing, by the jth household, x_{jk}, among with a vector of other variables E,

$$\frac{\partial U_i}{\partial \delta_{ij}} < 0$$

$$(5) \quad \delta_{ij} = f\ (x_{jk}, E)$$

$$\frac{\partial \delta_{ij}}{\partial x_{jk}} \begin{cases} < 0 & x_{jk} < \overset{=}{x}_k \\ = 0 & x_{jk} > \overset{=}{x}_k \end{cases}$$

determine the level of anti-social behavior by the jth household against the ith household, δ_{ij}. There is almost no evidence on the form of the f ( ) function; but above some level $\overset{=}{x}_k$, increases in housing consumption probably no longer reduce anti-social behavior.

To establish precisely this threshold level and therefore how significant the problem is in Canada is likely impossible.

Defining the threshold as housing which is not overcrowded and has basic services such as flush toilet and hot water, between 5 and 10 per cent of Canadian households consume less housing than this level.[15] While the percentage is small, large numbers of households consume less than the threshold. However, the magnitude of the external effect is probably rather small. The possibility that public intervention might be required and if so what form it should take is explored further in the next chapter.

Another technological externality which is probably much more important arises because of interdependent utility functions. The housing consumption of all households are arguments in each household's utility function, the example of household 1 is in (6).

$$(6)\qquad \begin{aligned} &U_1 = U_1\,(x_{11}, \ldots x_{1m}, x_{2k}, \ldots x_{nk}) \\ &\frac{\partial U_1}{\partial x_{jk}} \begin{cases} > 0 & x_{jk} < \bar{x}_k \\ = 0 & x_{jk} > \bar{x}_k \end{cases} \qquad j \neq 1 \end{aligned}$$

This interdependence likely ceases once the consumption of housing has reached the acceptable social minimum $\bar{x}_k$ and it will be assumed the interdependence is of a charitable rather than envious sort.[16] The social minimum may or may not be the same as the threshold of the consumption externality. Again, the maximization of social welfare may imply a public program to raise the housing consumption of low income households. Indeed the Pareto criterion alone may imply transfers in-kind which raise the utility of both recipient and donor, or at least reduce neither utility (see Brennan and Walsh (1977) and (1980), and Olsen (1980)). For obvious reasons, this interdependence of utilities is sometimes referred to as donor preferences.

The existence of this technological externality is rather hard to prove and certainly the functional form of the utility function has never been estimated. That housing assistance programs exist which reduce the price of housing to recipients and that one of the important factors determining eligibility for public housing is whether the household currently lives in substandard housing are both consistent with such externalities. But, these facts are consistent with other hypotheses explaining government programs as well. If one directly asks people whether as donors of a transfer they would care only about the recipient's own perception of their well-being or about the housing consumption of the recipient,[17] a large majority will profess to care about the housing consumption. Private charities also seem to redistribute in-kind rather than in-cash, for example providing hostels for singles or homes for the elderly. In spite of the casual nature of this empiricism, one can be fairly certain these technological externalities do exist.

To determine the significance of the problem further empirical questions must be answered: what is the level of housing consumption $\bar{x}_k$ at which the interdependence ceases, how many households would consume less than this amount in the absence of government assistance, and what is the donor's willingness to pay for increased housing consumption of the recipient? Using the same level for $\bar{x}_k$ as $\bar{\bar{x}}_k$, then between 5 and 10 per cent of households would generate a positive externality if their housing consumption were raised. Little evidence exists on willingness to pay. This externality is studied further along with the optimal public response in Chapter 3.

Another sort of technological externality also likely relevant in the housing area results because housing is spatially fixed. Purchase or rental of housing involves both purchase of a commodity and purchase of a location and a neighbourhood. Changes in the location characteristics or neighbourhood influence the consumption possibilities of the household consuming the housing at that location. Land use decisions, transportation investments, and the decision to renovate and maintain existing dwellings clearly generate externalities. Sometimes the latter are felt to generate a prisoner's dilemma situation. If all owners renovated, the increase in property values would repay the investment; but if one or several acted alone they and their neighbours would benefit but not enough to repay the investment. The result of no investment is highly likely (Richardson, 1978; and Davis and Whinston, 1961).

It is possible, in principle, to establish the existence of some externalities and measure them (but not a full prisoner's dilemma payoff matrix) using hedonic pricing techniques assuming they are capitalized in the value of land. This has been done to measure the value of clean air (Ridker and Henning, 1967), (Freeman, 1974 and 1975) and the benefits of public investments (Lind, 1973). Hedonic pricing is well-suited to estimating the effect of the renovation decisions of neighbours but this variable has not been included in existing studies. The technique does not however produce a measure of willingness to pay unless all consumers have the same demand function for the externality (Quigley, 1979).

Certain of the externalities are obviously best dealt with by regulation such as zoning bylaws and others will be dealt with through private negotiation where there are small numbers of people. Neighbourhood pressure on owners to maintain their dwellings and joint purchase of a dilapidated unit can be observed. Even large number cases can be dealt with through private covenants when a new subdivision is created.

Some externalities do remain however and of interest here is whether public mortgage market interventions might be required to deal with underinvestment in housing renovation. The prisoner's dilemma situation is likely the most important and a public role is warranted to deal with large scale redevelopment projects. However the key instrument for the public sector will either be expropriation or compulsory renovation, not a mortgage market intervention. A positive externality no doubt does result from home renovation, some of which is not dealt with by neighbourhood pressure although mainly from exterior rather than interior improvements. However the willingness to pay or value of the externality is likely so small that a program to subsidize renovation, perhaps using mortgage lending, would not generate benefits much greater than the costs of mounting it.

The final externality to deal with is the often cited positive externality from home ownership. Homeowners are better, more informed and more responsible citizens, it is argued, and people do not take account of this social benefit when deciding on their form of housing tenure. There is scant evidence in favour or against the claim that such externalities exist and are quantitatively significant, although there are emotional supporters of both sides. Whatever the reality, there is no need in Canada for a mortgage program to deal with ownership externalities. The existing income tax system already extends subsidies to homeowners, and the subsidies are probably in excess of a realistic valuation of the externality.[18]

The list of interdependences included under the general heading of technological externalities is very long. It is of course obvious that the need for and required sort of government intervention will be quite different to deal with each. This is a good example of how the choice of a policy instrument does not follow easily from the existence of an externality. In several cases, no government response will be required. In the context of this discussion paper, the important externalities have been shown to arise from consumption externalities and interdependent utility functions. The optimal response to these will be examined further in the next chapter.

Merit Goods

To proceed beyond conjecture and establish that housing consumption is a merit good is difficult. Validation against the facts is probably impossible because empirical work can never establish the correct social welfare function. Unfortunately however this does not mean merit goods can immediately be rejected as the basis for government policy. This justification for government intervention must be included in any examination of housing and mortgage markets. Introspection suggests that society cares not only about the utility levels of households but also about individual consumption of certain commodities which are deemed necessities. The eccentric millionaire who sleeps under a bridge is an object of concern. There is evidence that society cares enough to subsidize consumption, although not so much as to require consumption. Actual government programs in Canada are consistent with housing being a merit good, but they also are consistent with consumption externalities and interdependent utility functions, discussed previously. These three will be considered together in the following chapter in a section dealing with government policy in response to housing underconsumption.

Income Distribution

The distribution of income and wealth in Canada is the result of many influences including market determined factor prices, individual endowments, decisions about factor supply, investment in human capital and bequests. In the absence of government, this distribution may be inequitable according to our collectively defined standard of justice reflected in the social welfare function and there may be the potential for redistribution to increase social welfare. The nature of the social welfare function will, of course, be a major determinant of the need for and the extent of redistribution. For example, a utilitarian social welfare function adds the utility levels of each household and sanctions redistribution if the utility gain of the recipient is larger than the utility loss of the donor. If all have the same utility function whose lone argument is income, if the marginal utility of income is positive and declining and if redistribution does not change the aggregate income to be redistributed then a utilitarian social welfare function would call for complete equality of income. However if redistribution reduced total income as seems likely, even a utilitarian social welfare function will not imply complete equality.

The economist encounters great difficulty when trying to establish whether government programs are required to redistribute income and how large they should be. The social welfare function is not observable. Whether based on introspection, logical discussion or observation of government behavior, most would conclude that government programs to redistribute income would increase social welfare compared to a laissez-faire situation. This conclusion has been used to recommend housing assistance programs involving public mortgage lending. But the fact that a tax on the rich to support the housing consumption of the poor raises social welfare is not a sufficient condition to mount the program. Housing assistance may not be the optimal instrument to redistribute income. However, income redistribution has to be included in the rationales for government programs to be explored further in Chapter 3.

Observation of government over the last decade could also suggest the social welfare function embodies a concern about the distribution of income between households buying their first home and the rest of the population (just as the population is sometimes divided by old and young, or farmers and non farmers). It is widely believed that it has become more difficult for the first time homebuyer to acquire a house. There is some truth in the perception although the user cost of housing has not risen nearly so fast as is often claimed because the nominal outlays are offset by capital appreciation. The relative user cost of homeownership has risen, although an index of all prices including the user cost of homeownership has risen less rapidly than per capita disposable income (Fallis, 1983a). Assuming new homebuyers have experienced the average change in income, they have not become worse off. New homebuyers do face problems however because of inflation. The standard level payment mortgage requires higher real payments in the early years and the burden of mortgage payments although offset by capital gains is hard to finance because the gains are unrealized. This requires innovation in financial markets however rather than income redistribution.

Second Best Issues

In thinking about a possible role for government in residential mortgage markets, the approach has been to imagine the world without government to see what barriers in the laissez-faire economy would prevent achieving the social welfare maximum. Government programs were conceived as means to attaining the maximum. However, this approach must now be extended to recognize that in reality government programs may exist which are themselves barriers to optimal resource allocation. If these barriers cannot be removed, there may be a second best argument which justifies government intervention to redress the distortion.

The most important example of such a policy is rent controls. Controls exist in many provinces and likely reduce new construction even though it is exempted and certainly reduce the rate of maintenance and speed the conversion of rental units into condominiums or non-residential uses. The stock of rental housing will be less than optimal. It is sometimes suggested that a public mortgage lending or mortgage subsidy scheme be mounted to offset this effect. To fully compensate for controls, the subsidy would have to be extended to every landlord such that controlled rents plus subsidy just matched what market determined rents would have been. This would be enormously costly. However it simply shifts the burden of redistribution which is occurring from landlords to the general taxpayer. There can be little doubt that taxpayers would not want to finance such a system. It is clear the proper response is to remove controls rather than try to offset their effects.

Another set of government actions may lead to a stock of owner-occupied housing which is too large. The personal income tax system gives preferential treatment to savings placed in housing equity. The Registered Home Ownership Savings Plan permits deduction from taxable income of savings used eventually to purchase a house; the imputed income from housing equity is not taxed; and capital gains realised on sale of a principal residence are not taxable. The residential property tax counterbalances these advantages somewhat. However there seems little need to try to offset the net effects. If the subsidy is desired, obviously no response is needed. If the subsidy is not desired, one must ask why it is there and the answer usually given is that it is administratively difficult to design a tax system which is neutral with respect to housing. Certainly no mortgage market intervention could deal with this.

Occasionally government lending to finance housing is justified because of regulatory barriers restricting the private flow of credit to housing. This does not apply to mortgage credit in Canadian financial markets. In many countries precisely the reverse is true: regulations attempt to increase the private flow of credit into mortgages.

Second best arguments, therefore, do not offer additional rationales for possible intervention in residential mortgage markets. Of course, the theory of the second best will be used in designing an optimal government policy. Several of the necessary conditions for the private market to attain the social welfare maximum may be violated at once and so a policy to deal with one condition will not necessarily improve social welfare. More importantly governments cannot redistribute income with costless lump sum taxes or transfers but must choose from among instruments, all of which have efficiency costs. In a sense, the problem of public policy is always a problem of the second best. Chapter 3 which explores the selection and design of optimal programs is really an exploration of second best issues.

The various rationales for possible government intervention discussed in the preceding sections constitute the usual list in welfare economics. Two items from the original list of seven have not been dealt with. Public goods have been ignored because housing is obviously not a pure public good. The public good aspects of the externalities from housing consumption were dealt with in the externalities section. Also the need for government to provide a system of law and courts has been ignored. This item obviously provides possible justifications for government involvement in many housing matters: from landlord and tenant law which would be unlikely to imply involvement in residential mortgage markets to laws governing the contracts between depositors, owners and managers of financial intermediaries which would have substantial impact on residential mortgage markets. The recent problems of Greymac and Seaway Trust in Ontario are evidence of this. However the issues which arise here should be studied in a general study of laws and regulations governing financial intermediaries. The essence of the rationale for a government role is not specific to housing matters or residential mortgage markets.

Economic Fluctuations

Neoclassical economics also recognizes a potential role for government in order that society might achieve high employment, price stability, stability in the balance of payments and an appropriate rate of economic growth. This role is usually dealt with under the heading of macroeconomics or stabilization policy rather than welfare economics. Fundamentally, however, the approach is the same. Government intervention to stabilize the economy is considered when it has the potential to increase social welfare considering both present and future generations. Mortgage market interventions are highly unlikely to arise out of concerns about the balance of payments or growth and these will not be considered. At issue here is a possible role related to unemployment and inflation, or more generally, to stabilizing fluctuations in the economy. Two sorts of fluctuations will be considered: fluctuations in the entire economy and fluctuations in the housing sector.

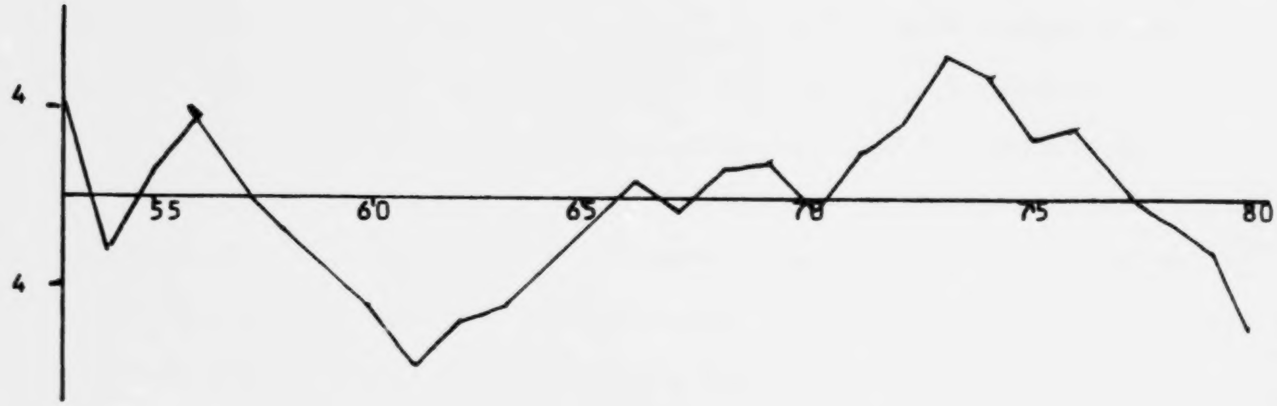
In order to establish a role for government in stabilizing the entire economy, it should first be shown how the economy would fluctuate in the absence of government policy. This would require analysis using a large simulation model of the economy which is beyond the scope of this monograph. Instead, data from the last twenty years are presented to show the existence and pattern of fluctuations. These of course are not the data which arose in a world without government but are data which include the influence of government policies. However under the assumption that all government policy was not destabilizing, they give a rough indication of the extent of fluctuations.[19]

Fluctuations in the national economy are indicated here by the percentage deviation of real GNP from the long-run trend, calculated as the negative exponential curve fitted to annual real GNP (1971 dollars). Fluctuations can also be indicated by the level of unemployment and the rate of inflation. These data are presented in Figure 2-1. GNP fluctuates considerably around the growth trend and the broad patterns revealed are familiar. Until around 1970, when the economy was rising to above trend, unemployment fell and inflation increased and when the economy was falling to below trend, unemployment rose and inflation decreased.

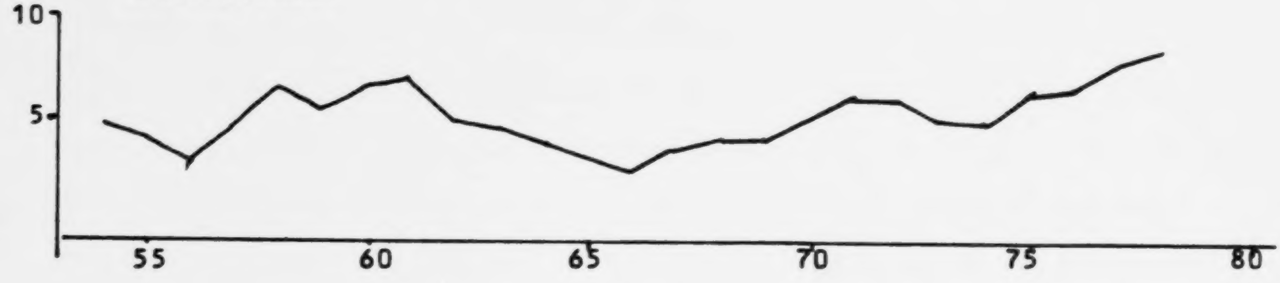
Figure 2-1

FLUCTUATIONS IN THE ECONOMY

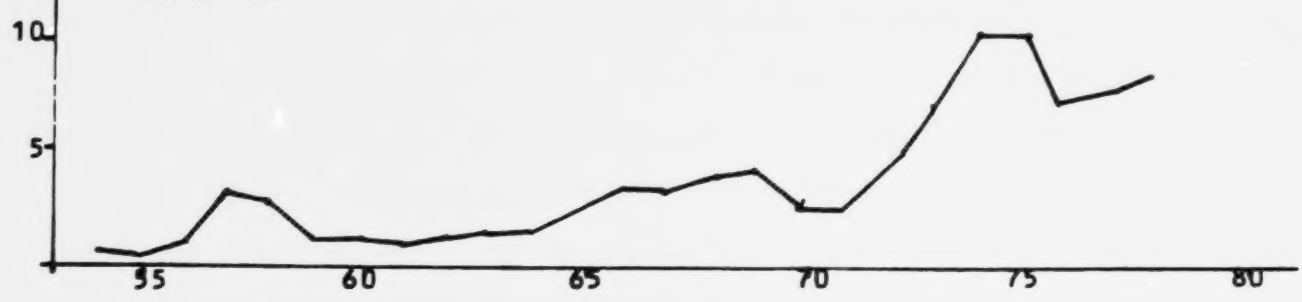
PERCENTAGE DEVIATION OF REAL GNP FROM LONG RUN TREND



UNEMPLOYMENT



INFLATION



The fluctuations after 1970 have been somewhat different. In the expansion to 1973, unemployment declined very little and inflation rose significantly, and in the subsequent decline after 1973, unemployment rose but, except for a sharp drop in 1976, inflation continued to rise.

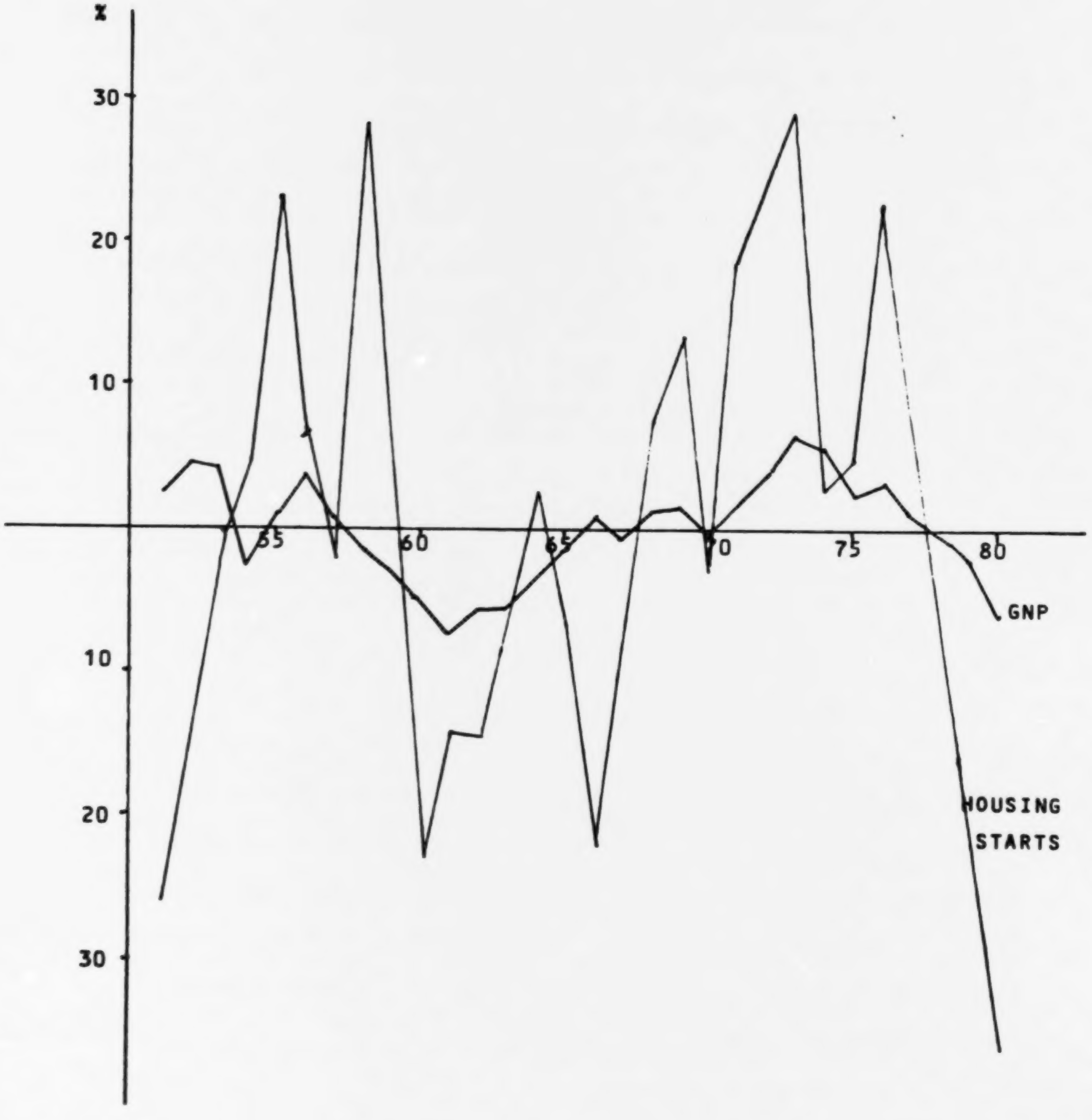
Thus, the economy does show significant fluctuations and the possibility must be considered of using fiscal and/or monetary policy to stabilize the economy and so increase social welfare. The fiscal or monetary policy might involve mortgage market interventions. If the government wished to stimulate the economy, a public mortgage lending program could be adopted; or if the government wished to contract the economy a reduction in public mortgage lending could be legislated. The latter assumes that there would exist a base level of public mortgage lending not justified by stabilization concerns. If no such base existed, mortgage lending could only have a net stimulative effect. Alternatively the government may wish to adopt a monetary policy which contains offsets for sectors where investment is particularly interest elastic. Housing is such a sector and a prolonged restrictive monetary stance with high real interest rates might be accompanied by a public mortgage lending program. This would be justified if it were the optimal monetary package in the sense of being social welfare maximizing or achieving a given reduction in the rate of inflation at the least increase in unemployment. Alternatively, a prolonged easy monetary policy with low real rates might be paired with reductions in the base level of public mortgage lending.

There is considerable debate among economists about the efficacy of the various instruments of stabilization policy, or more broadly, debate about the optimal instruments of intervention, which of course may include doing nothing. This will be taken up in Chapter 3, focussing especially on whether mortgage market interventions could be part of the optimal package of programs. Here the point to make is that economic theory and the data support further consideration of interventions to stabilize fluctuations in the national economy.

Under the general heading of economic fluctuations, a second possible rationale for intervention relates to fluctuations in the level of housing investment. Housing investment includes both new construction and improvements to the existing stock but since there are few data on the latter only new construction will be considered here. Figure 2-2 presents data on the percentage deviation of annual housing starts from the long-run trend measured as a negative exponential function fitted to annual Canadian housing starts. Figure 2-2 also repeats the graph of fluctuations in the national economy. Housing starts display substantial fluctuations, and fluctuations of much greater amplitude than those in the economy.[20]

Figure 2-2

FLUCTUATIONS IN HOUSING STARTS AND THE ECONOMY
EXPRESSED AS DEVIATION FROM TREND



It is sometimes argued that to stabilize the fluctuations in new construction would substantially increase social welfare. It is alleged that fluctuations have meant the housing sector is undercapitalized, has not invested in research or adopted new technologies and that input costs are higher to compensate for dislocation and unemployment. Reductions in housing fluctuations could therefore reduce long run average costs of housing production (see Clemhout (1981) and Clemhout and Neftci (1981). While at first intuitively appealing, there is little empirical evidence to support these arguments. It was once felt that factory produced components for mass production housing would yield substantial savings. These technologies have been tried and few savings materialized. Housing production was revealed to be intrinsically different in time, place and dwelling type. It was also found that consumers value heterogeneity. As renovation becomes an increasing fraction of housing investment, the opportunities for scale economies become correspondingly reduced. Also, labour and other factors move relatively easily in and out of residential construction commanding little premium for the dislocation.

Even if savings were realisable from stabilizing housing starts, two other problems must be addressed. To achieve the desired result, a government must possess sufficient economic expertise to recognize turning points in the housing cycle and sufficient political will to adopt an appropriate response, including of course holding housing starts in an expansion below what they otherwise would have been. The evidence of the last ten years makes one reluctant to recommend a policy of sectoral fine tuning.

Further, it is possible that stabilization of the housing sector would work against stabilization of the entire economy and on balance would not increase social welfare. It should be emphasized that what is being considered here is an intervention focussing only on the housing sector independent of other concerns, not a macroeconomic policy with sector specific components which was considered above. Figure 2-2 and Table 2-1 analyse the relationship between fluctuations in the economy and housing starts.

Between 1952 and 1967, housing starts were roughly out of phase with the national economy. On three occassions, housing starts contracted while the economy expanded (or vice versa) and over two other periods, although when comparing the beginning and end of the period the two moved in the same direction, housing starts turned down sharply before the economy's peak and turned up sharply before the economy's trough. This countercyclical pattern was reported and explained in White (1967) and Smith (1974). The principal explanation was the high interest elasticity of apartment investment and of demand for owner-occupied housing, the lagged response of the mortgage interest rate to changes in the level of all interest rates and the procyclical movement of the level of interest rates. In such a world, housing investment is a

Table 2-1

Relationship Between Fluctuations in Housing Starts and the Economy 1952 - 1980

Fluctuations in the Economy Dates of Expansion	Contraction	Fluctuations in Housing Starts[1] Net Fluctuation	Detailed Fluctuation
	1952-54	expansion	expansion
1954-56		expansion	expansion-contration (downturn before economy's peak)
	1956-61	contraction	contraction-expansion (upturn before economy's trough)
1961-66		contraction	expansion-contraction (downturn before economy's peak)
	1966-67	expansion	expansion
1967-69		expansion	expansion
	1969-70	contraction	contraction
1970-73		expansion	expansion
	1973-75	contraction	contraction-expansion (upturn before economy's trough)
1975-76		expansion	expansion
	1976-80	contraction	contraction

[1] If the percentage deviation of housing starts from trend rose over the reference period defined for the economy, the housing fluctuation was called expansionary (and a fall was called contractionary).

type of 'automatic stabilizer'. To smooth its fluctuations would likely complicate considerably the stabilization of general fluctuations.

Since 1967, the pattern has changed. Housing starts and the national economy have moved together. A full theoretical explanation has not yet emerged but likely a partial explanation is the closer integration of the mortgage market with other financial markets especially after the freeing of the NHA rate in 1969 and the emergence of expectation-based inflation in which rising interest rates have accompanied levels of economic activity which are falling below trend. (von Furstenberg (1979) discusses the fluctuations of housing starts in an unstable Phillips curve world). Although the two fluctuations move together, stabilization of the housing sector may still work against macroeconomic policy. If the stabilization policy desired involves a reduction in aggregate demand, despite there being a cyclical downturn, in order to reduce inflation and so inflationary expectations then again to increase housing starts would conflict with overall stabilization. This seems to be the case at present in Canada.

The accumulated evidence and reasoning recommends that mortgage interventions to stabilize the housing sector are not appropriate.

The examination of welfare economics' rationales for government intervention is now complete and has suggested that several problems should be studied further: a non-competitive mortgage insurance market, discrimination in mortgage lending, underinvestment in high risk loans, denial of credit by private lenders because of incorrect information, externalities from housing consumption and donor preferences, merit goods, income distribution and stabilization of the economy. In each case perhaps a mortgage market intervention will be the optimal instrument. Somewhat paradoxically, the possible rationales for intervention which were ultimately rejected have been discussed most fully in this chapter. This imbalance is remedied in the next chapter.

Chapter 2 - Notes

1 There are alternative strategies which might be adopted. Many economists assume that a Pareto efficient allocation of resources is desirable and leave the discussion of the desirable distribution of output to the political process. This approach is advocated by Harberger (1978). Others attempt to infer a specific welfare function from observed government behaviour and others attempt to deduce a welfare function through logical reasoning in the tradition of Rawls (1967).

2 When openly stated like this, the tautology implicit in such a program evaluation is obvious; but many program evaluations especially within government departments are of this sort.

3 One might speak of maximizing discounted social welfare. However, it may be that social welfare functions change over time and/or that no discounting is required between generations. Rather than speak of discounting, a more precise usage would be to speak of social welfare defined over present and future time periods.

4 Atkinson and Stiglitz (1980) present a good discussion of different functional forms of the social welfare function and their implication for interpersonal utility comparisons.

5 The concept of a merit want or merit good is an elusive one. What Musgrave (1959) called merit goods have also been variously called goods for which we have individual-social preferences (Thurow, 1974) and goods included in our specific egalitarianism (Tobin, 1970). Many analysts shy away from the concept because it may rationalize the intervention of an outside authority into individual decisionmaking; a result in sharp conflict with the liberal principles of economics. Some economists allege its only basis is when individuals cannot judge for themselves the consequences of their actions because of uncertainty and information problems and therefore merit wants do not constitute a separate necessary condition for intervention (McLure, 1968 and Head, 1966 and 1969). Others consider utility interdependence as as class of merit good problem (Hillman, 1980).

6 A good discussion of the framework of welfare economics and an intuitive presentation of theorems showing the private market will achieve the social welfare maximum are available in Layard and Walters (1978) or Boadway (1979). Musgrave (1959) originally outlined more broadly the three roles for government of allocation, distribution and stabilization.

7 It is somewhat circular to say private markets will yield the maximum if there are no stabilization problems. A correct

approach would list those conditions which prevent private markets from being as stable as the social welfare maximum.

8 It also assumes that the other seven necessary conditions for government intervention do not hold.

9 Lack of competition is unlikely to arise from concentration in the supply of or demand for loanable funds.

10 Smith (1978) reached a similar conclusion.

11 A subsequent section of this chapter considers whether the existence of uncertainty might require public mortgage insurance.

12 The labour market is obviously not competitive because of labour unions. While perhaps distorting the allocation of resources to housing, unions remain because of their effects on other goals. In any event, it does not seem likely that mortgage market interventions would be the instrument chosen to redress the misallocation.

13 A distinction is sometimes made between a situation when there exist subjective or objective probabilities about the future state of the world, termed 'risk'; and when no probabilities exist, termed 'uncertainty'. The more normal usage is to define uncertainty as when there is not perfect certainty, and risk as the type of uncertainty when probabilities exist. This is the usage adopted in this monograph. The terms risk and uncertainty become virtual synonyms because the situation without probabilities is ignored. "It seems fair to conclude that no satisfactory basis for decision can be found that does not invoke judgements concerning the likelihoods of various states of nature" (Dorfman, 1962). See Layard and Walters (1978) for a good introductory discussion of the economics of insurance.

14 A very recent piece by Smith (1983) suggests that government lending when there is credit rationing due to imperfect information of the sort discussed by Jaffee and Russell (1976) may yield a Pareto improvement. This possibility warrants further study but at this point cannot be the basis for recommending public lending of residential mortgages.

15 The calculation is based on a special survey of dwelling units in census metropolitan areas conducted by CMHC in 1976. CMHC (1981b) extrapolated the data for renters to 1979 and found that 11 per cent of renters lived in crowded units or units without basic services or in poor condition. If both renters and owners from urban and rural areas were included, likely between 5 and 10 per cent of households would have inadequate shelter.

16 Interdependence based on envy would work in the opposite direction. To see someone else's housing consumption rise would reduce your utility.

17 This is a question I have asked many classes of university students and a large majority say they care about how the transfer is consumed.

18 The income tax system in Canada exempts the net imputed income from owner-occupied housing, exempts capital gains realised on the sale of a principal residence and permits deductions of certain monies used to purchase a house. Other taxes are levied on owner-occupiers, most importantly the residential property tax which may be viewed as a tax on capital and is probably less than property taxes on business and industrial capital. On balance the entire tax system favourably treats owner-occupiers. See O.E.C. (1976), Canada (1979) and Fallis (1980) for measures of some of the benefits and citations on the tax treatment of housing.

19 Some monetarists would argue that the economy without government is relatively self-stabilizing and that many observed fluctuations are due to government attempts to stabilize the economy.

20 A recent study of housing cycles and the business cycle in the U.S. is Grebler and Burns (1982). They find distinctive residential construction cycles but no clear pattern of countercyclical movement with respect to fluctuations in GNP.

3. OPTIMAL INSTRUMENTS FOR INTERVENTION

This chapter is the second step in determining what the role of government in residential mortgage markets ought to be according to neoclassical welfare economics. Chapter 2 laid out the framework and looked at each rationale for government policy as it applied to housing matters: examining in theory why an improvement in social welfare was possible, assessing the evidence on whether the rationale for government intervention existed in Canada, and if the evidence indicated a program might be warranted, discussing in a preliminary way instruments to deal with the problem. This exercise produced nine issues deserving further scrutiny. These nine may be grouped under five headings: unserviced borrowers, a situation which can be caused by discrimination, underinvestment in high risk loans, or incorrect information held by lenders; non-competitive mortgage insurance; underconsumption of housing, which can be caused by externalities from housing consumption or donor preferences or by merit goods issues; income distribution; and fluctuations in the economy. The latter three headings do not explicitly relate to the mortgage market but public mortgage lending, guarantees or insurance might be part of a program to deal with the problems. Each will be analysed to determine whether a mortgage market intervention will be a part of optimal government policy.

In principle at least, the procedure for establishing optimal government policy is relatively straightforward. The initial iteration has established where government intervention might increase social welfare. The optimal program, to be chosen now, is that which yields the maximum increase in social welfare. This selection will involve not only comparing different instruments for resolving a problem, for example comparing cash grants versus subsidized mortgage lending in order to redistribute income, but also determining the optimal design of a policy, for example establishing the optimal rate at which a cash transfer should be reduced as income increases. Each possible instrument must be designed to yield the maximum increase in social welfare, and then the optimal instrument is chosen from among them. In some cases a combination of several instruments, for example mortgage lending and interest subsidies, could be the optimal response. In other cases, when proper attention is paid to lags and inefficiencies in government decisionmaking, the optimal policy might be to not intervene.

The procedure involves a comparison of the world with and without a given government program. Of necessity, at least one side of this comparison does not exist in reality and so must be hypothesized or forecast. To forecast demands an understanding of how people behave and how the economy operates and the prediction will only be as good as the economic theory and empirical work underlying it. An analyst must be very careful to characterize the world without government as it would actually be, not as he would like it to be; and similarly to characterize the program as it is likely to operate, not as he would like it to. The real world is not identical to our abstract notions of the invisible hand or of a guided hand. The complete process of choosing an optimal policy is thus a blend of normative and positive economics.

The general methodology appropriate for choosing an optimal policy instrument is very similar to methodology used in the economic literature on taxation: the literature dealing with the incidence of taxation compares the world with and without a given tax, and the optimal tax literature studies how to maximize social welfare given that a certain amount of money is to be collected. This work has several lessons for this study. It is important to remember that any government program must be financed and it is the net effect of program and financing - for example, government mortgage lending and government borrowing to finance it - which must govern the choice of a policy. Any public policy will have general equilibrium effects changing many commodity and factor prices, which alter household utility on both the sources and uses side of the budget. All must be recognized in assessing the change in social welfare caused by the policy.

Although the methodology is straightforward and well articulated in theory, it is hard to carry out for several reasons.

There are hundreds of possible instruments and many times more combinations of instruments so the social welfare achievable under all of them cannot be compared. In the mortgage area alone, a list could be quickly extended: government could make mortgage loans, guarantee mortgages, act as an insurer of mortgages, reinsure mortgages, establish institutions to buy and sell mortgages in the secondary market, apply special reserve requirements against the mortgage assets of financial intermediaries, give special tax treatment to intermediaries specializing in mortgage lending, directly regulate the mortgage lending or mortgage insurance business, and so on. The list is far from comprehensive and of course administrative variations of each item are possible. In a survey like this, only a few programs can be compared and then only in a stylized form.

Many of the data, functional forms, and even answers to solvable theory problems are not known. This is not to imply of course that one operates in ignorance for there is a large and growing body of theoretical and empirical research to draw upon. But there remain gaps in our knowledge. Of critical importance here is that we do not know the specification of individual utility functions and whether they are interdependent and we do not know the specification of the social welfare function. Any policy recommendation is contingent on an assumed social welfare function. The assumed social welfare function should always be made clear.

All this is simply to say that the desired huge simulation model of the economy does not exist which can be used, given a criterion for choice, to produce unambiguous and universally acceptable policies. Analyses must be somewhat more rough and ready - in part science, in part art. Any conclusions will be surrounded by caveats. But this will still involve beginning with a consistent theoretical framework and proceeding carefully through the findings of economic theory and empirical estimations. It is intended that Chapter 2 and Chapter 3 set out the grammar of the arguments and that the main dimensions of a solution emerge in which one can place considerable confidence.

The preceding chapter dealt with the role of government in residential mortgage markets without reference to the existing programs of the federal or provincial governments. This will be continued here in order that the dictates of theory can be examined, although an awareness of actual policies has influenced the analysis somewhat. The potential for interventions to deal with housing underconsumption and income distribution will receive considerable attention because much public mortgage lending has been concerned with these issues. Possible interventions explicitly relating to the operation of the mortgage market, however, will be considered first.

Unserviced Borrowers

The survey of Chapter 2 identified several reasons why private mortgage markets might not advance loans which would be made at the social welfare maximum. Discrimination, a form of non-competitive behavior not necessarily associated with monopoly or oligopoly market structures, can lead to borrowers being refused loans. In an economy with uncertainty, there may be underinvestment, compared to the social welfare maximum, in high risk activities; or lenders may have incorrect information. As a result, mortgage loans may not be advanced to certain households; for example households with a-typical work histories or who occupy non-standard sorts of dwellings or who live in rural or northern areas of the country.

In such cases, public sector activity may improve social welfare. However the complete argument establishing the need for government has not yet been made. There has not been careful empirical work establishing what loans would have been made at the welfare maximum and comparing these to actual lending; and there has not been theoretical work explaining why private lenders did not make the socially optimal loans. Nevertheless, there have been sufficient allegations that certain borrowers have not been granted credit to warrant an investigation by the public sector.

The need at present is for government to document unserviced borrowers' problems, investigating rejected loan applications, applications where borrowers sought more credit or on different terms than they received, and if possible whether borrowers have been discouraged from seeking a mortgage. Then a reason for lack of lending should be developed from among the competing explanations. It may be due to discrimination, underinvestment in risky projects, or incorrect information on the part of lenders.

However, as discussed previously, there are other reasons. For example, a borrower refused a mortgage on the standard terms may have no demand for credit when an appropriate risk premium is attached. Public intervention would not improve social welfare in this case. Or, the refusal may exist and be consistent with an optimal allocation in a world of imperfect information.

Where discrimination is the issue, there exists a legal system to judge the complaint and provide means of redress. To institute adjudication of mortgage disputes would duplicate the existing system. There appears no need for special remedial public lending.

Where incorrect information explains the refused loan, several approaches are possible. The correct information could be provided; although this is unlikely to change lender behavior because they will trust their own information as opposed to that provided by the government. The choices then become to compel private lending or to extend public loans or to insure private loans. The latter two are preferable because the public sector would be accepting the risk of their information being incorrect. For example, suppose the government alleged the income streams and separation probabilities of common-law marriages were such that the full income of both spouses should be used in judging a mortgage application while private lenders assessed the probabilties differently and refused to consider both incomes. The public sector could offer loans or set insurance premia reflecting its assessment. If it proved correct, private lenders and insurers would service these borrowers and the need for public intervention would gradually disappear. If its assessment proved incorrect, any costs would be borne by the government.[1] If the public sector insured the private loans extended to common-law households, because of co-insurance with the lenders (resulting from the costs of reinvesting funds) there is less likelihood that the socially optimal loans would be extended. Also a public insurance program may be more costly because loans would have to be processed twice, once by the private lender and once by the government insurer, although this need not be the case if the characteristics of eligible borrowers can be well specified. Balanced against this must be the possibility that private lenders have lower administrative costs than public lenders.

If the explanation is the unwillingness of lenders to make high risk loans, and there are insufficient numbers of these borrowers to permit risk pooling by private concerns, public lending with an appropriate risk premium or public insurance at an appropriate premium are alternative responses which could improve social welfare. In both cases, the public sector is engaged in a risky undertaking which is justified because it is pooled with other projects in the government's portfolio.[2] Again, public lending has advantages because the co-insurance of private lenders and the scale economies of dealing with certain risk classes of loans would mean private lenders were less likely to advance loans.

But, private lenders may be more efficient, so public insurance might have advantages.

The optimal response to unserviced borrower problems, therefore, requires the public sector have the authority to make direct mortgage loans, or insure private loans. Any choice between the two remains somewhat speculative given existing evidence. However, there is no proof that large scale activity will be called for and the immediate issue is to document the problem. The mechanism for redress, though, should be in place.

Non-Competitive Mortgage Insurance

The residential mortgage insurance industry has always been dominated by CMHC as a public insurer under the National Housing Act. In 1978, CMHC held 57 per cent of the mortgage insurance in force (Task Force, 1979, 49), although the fraction had been declining rapidly to that date. There once were three private insurance firms, but now there is one. It is likely that the industry would be oligopolistic although not monopolized if there were no public involvement. Rather than addressing the question of what policies should deal with oligopoly, it is more appropriate to ask whether the maximization of social welfare requires a continuance of public mortgage insurance. Thus, there are two options to consider: public insurance may be maintained, or public insurance may be phased out and the industry subject to existing competition laws and existing regulations governing the insurance industry.

There are several issues bearing on which option will achieve the highest level of social welfare. Discontinuing public insurance leaves open the possibility of non-competitive behavior, perhaps even collusive behavior, causing resource misallocation. However, if the market were contestable, even with a small number of firms no misallocation need occur. Although it is not likely one firm would capture the entire market, it is possible that one firm would be the sole provider of one type of insurance if the market became more segmented by risk class or by type of mortgage instrument (e.g., price-level adjusted mortgage, or graduated payment mortgage). Some risk classes may be so small or so few of one type of mortgage contract made that only one firm could provide insurance. A critical parameter determining the extent of misallocation possible is the premium elasticity of demand for mortgage insurance; the more inelastic the demand the greater returns to collusive behavior. The demand for mortgage insurance, particularly on non-standard mortgage contracts, is likely inelastic.[3] Existing competition laws and insurance regulations would provide some constraint against non-competitive behavior, but experience suggests would not prevent it altogether.[4] At present there is no public insurance of loans over $70,000 leaving only one firm in the industry. A study of private insurance on large loans would show whether greater than normal profits have been earned, but no such research is available.

Replacing public insurance with private insurance might change the resource cost of initiating and processing insurance applications and of managing the investment portfolio. Current conventional wisdom suggests private insurance companies would be more efficient but there is little evidence to confirm or deny this. Existing charges by CMHC for loan insurance initiation are likely below the true costs (Task Force, 1979).

The secondary market in mortgages would develop less rapidly if public insurance were discontinued because private insurers would have different criteria for assessing insurable loans and offer less security than the government, making it more difficult to buy and sell packages of insured mortgages. Also, the resource cost of using public insurance in pursuit of other goals (such as was suggested in the section on unserviced borrowers) would increase because expertise in insurance matters would have to be acquired.

The continued operation of public insurance allows the possibility of subsidies being delivered inadvertently to borrowers, as has often been the case in the past. The existing system does not differentiate borrowers by risk class. High risk borrowers such as non-profit groups or new home purchasers receiving extensive government assistance have been insured at the regular premium. This, of course, is not to argue that the subsidization of mortgage insurance could never be an instrument of public policy. However, the role of delivering actuarially sound insurance, which the private sector could undertake, and the role of subsidizing insurance, which the private sector could not, can become intermingled preventing rational policy decisionmaking. It has been argued that at present CMHC has been inadvertently subsidizing all their mortgage insurance (which led to the shrinkage of the number of private firms).

If public insurance were terminated, the possible gains from more efficient operation and better assistance policies must be traded off against possible oligopoly resource misallocations, weakening of the secondary mortgage market and the increased cost of using a policy instrument. On balance[5] and recognizing the welfare costs of a transition, one might tentatively recommend the continuation of mortgage insurance. However it is extremely difficult to quantify the costs and benefits of the various results. Another possibility to consider is a partial withdrawal from mortgage insurance. CMHC could cease to offer mortgage insurance (perhaps even selling off its existing operation) but retain a re-insurance function, re-insuring the portfolios of private firms. This was advocated by the Task Force which submitted the Report on Canada Mortgage and Housing Corporation (Task Force, 1979). Through this vehicle the policy objectives of public insurance could be achieved. In terms of effects, there is little to distinguish the two instruments and the choice between them would likely be based on a preference for public as opposed to private decisionmaking.

This examination of Canadian mortgage markets reveals they operate very well. The initial survey suggested two areas where public intervention might raise social welfare and neither, on further exploration, called for major public intervention. Optimal policy is to investigate the problems of unserviced borrowers and where problems are documented to respond with public loans or insurance, and to continue in mortgage insurance either through public insurance or public re-insurance of private companies.

However, proposals to alter the way private markets allocate credit are seldom motivated by a perception that the financial markets *per se* have failed. Rather, the allocation of credit is seen as an instrument to alter real resource allocation or income distribution. This is the subject of the next two sections.

Underconsumption of Housing

Several different justifications for government intervention to raise the housing consumption of households have been identified. Consumption externalities, donor preferences and merit goods all could conceivably justify programs to increase housing consumption, or programs that might be called housing assistance.

The questions to be addressed in this section are several. What is the optimal instrument for intervention and the optimal design of that instrument? Will the optimal instrument involve the mortgage market? Obviously, the answers depend on the original justification, but because all deal with underconsumption of housing, they are considered in one section. The responsibility of the public sector for income redistribution could possibly lead to a housing assistance program - the housing assistance being used to raise the income of the recipient. This rationale for public policy and the choice of instrument to deal with it are considered in the next section.

The discussion of Chapter 2 pointed out that the problem was not likely one of general underconsumption of housing. Once housing consumption has reached a certain level it is likely that further increases in consumption do not generate externalities, or donor preferences no longer operate, or social welfare does not increase except by increasing an individual housing consumer's utility. It is likely that most households in Canada have passed this threshold. The problem is to raise the housing consumption of a specific, rather small, subset of the population. In the writing on housing problems by non-economists, this is sometimes referred to as a housing adequacy problem.[6] Every household, it is felt, should consume at least a certain level of housing services. This level is decided by society and can vary over time especially when national income per capita is growing.

At a conceptual level, there are three basic approaches to increasing housing consumption.[7] In one, the price of housing (either owned or rented) to specific households is reduced below the market price. A public housing program, a shelter allowance and a subsidized mortgage lending program are examples of price reduction policies. Assuming a negative price elasticity, the household increases its housing consumption. The magnitude of the increase depends on the price elasticity and often will be such that the consumption of other goods also increases with the fall in the price of housing. In another approach, the income or wealth of specific households is increased and assuming a positive income elasticity, the household increases its housing consumption. Again the magnitude depends on the elasticity and usually the consumption of non-housing goods increases. A third approach is to require by law given levels of housing consumption. This does not seem feasible nor acceptable in our society and will be considered no further (although it clearly is accepted in the case of education). Building codes could be interpreted as laws enforcing a minimum level of housing consumption which can be escaped only by crowding a unit of acceptable standard or by living in the streets.

None of the basic approaches specifically mentions the mortgage market which is the focus of this monograph. However, as a means to achieve a price reduction, a mortgage market intervention offering terms more attractive than were available in the private market might be called for. Before proceeding to an examination of the specific means to achieve a price reduction (or an income increase), the general problem of choosing between the two basic approaches will be considered in detail. No unique solution emerges from this analysis, but the framework set out is important because it sets out precisely the issues involved in a choice between policy instruments.

The problem facing government is to select and calibrate a program to maximize social welfare, given the existence of consumption externalities or donor preferences or housing as a merit good, and given the resource and technology constraints of the economy and given the maximizing behavior of households (see equations (1), Chapter 2). The government can choose either a program to reduce the price of housing to specific households or a program to increase the incomes of certain households. Of course the program must be financed either by reduced government expenditures, increased taxes, or by borrowing (or a reduction in the quantity of bonds retired if the government is in surplus). It is the effect on social welfare of both the assistance and the financing which determines which program to choose. The specification of the problem in a general equilibrium framework and its solution are cumbersome, complex, and difficult to interpret. Understanding is greatly facilitated by examining several restricted problems to see the factors which influence the choice of an optimal instrument.

Consider a simple two-person world in which one person underconsumes housing and will receive assistance and one person will pay for the assistance. For simplicity the assistance and financing have no effect on price. It can be easily shown that a given increase in housing consumption can be achieved at lower cost to the government using a price reduction program rather than a lump sum cash grant program.[8] This suggests that a price reduction approach be used for housing assistance. However a price reduction and a lump sum grant program of equal cost to the government do not yield an equal increase in utility to the recipient household. The lump sum grant gives a greater increase in utility (but a lower increase in housing consumption). Aaron and von Furstenberg (1971) provided estimates of differences in cost between a housing price reduction and a lump sum grant which give the recipient the same increase in utility. The results are sensitive to the elasticity of substitution between housing and other goods (and by implication the price elasticity of housing demand)[9] and the size of the price reduction. The greater the elasticity of substitution, (the more elastic the demand) the lower the lump sum grant needed for equal utility. The higher the percentage price reduction, the greater is the relative difference between the cost of a price reduction and lump sum transfer.

The choice between a price reduction and a lump sum grant therefore involves a tradeoff. The price cut produces a greater increase in the housing consumption of the recipient which is valued because of the externality or the preferences of the donor or because housing is a merit good; but this must be balanced against the greater utility gain to the recipient of a lump sum transfer.

If there is a social welfare function in which the marginal social welfare gain of increased utility to the recipient is greater than to the donor, one can think of weights being added to the tradeoff. The value of the externality, or the donor's preferences are weighted less than the utility gain of the recipient.[10] This would tend to shift the choice toward a lump sum transfer. If housing were a merit good, it would depend on the 'weights' implied by the social welfare function whether the choice is tilted more or less toward a price reduction program. The discussion so far has assumed there is only one recipient household. In this case, the cash grant can be a lump sum grant. However, if there are many heterogeneous households, the cash transfer will be contingent on income and so have efficiency costs compared to a lump sum transfer.

In choosing between a price and an income program, the government must simultaneously choose the optimal price cut or optimal amount of a grant and the optimal total amount to be redistributed. The solution to this broader problem is explored in the following example. The government seeks to maximize social welfare (7) by designing an optimal price reduction program and an optimal financing system using a linear income tax. The population has been divided a priori between donors and recipients (a more general treatment would establish this endogenously). A parallel problem of an optimal cash grant, linear in income, financed by a linear income tax would then be solved. The level of social welfare under each would be compared in making a choice.

More specifically, consider the problem of designing an optimal housing price reduction given donor preferences. Assume that there exist interdependent utility functions such that the housing consumption of the first g households, ranked in ascending income before any government intervention, enters as an argument in the utility functions of the remaining g+1 to n households.[11] Each donor cares about the housing consumption (the kth good)

$$W = W[U_1(x_{11}, \ldots x_{1m}), \ldots U_g(x_{g1}, \ldots x_{gm}), U_{g+1}(x_{g+11}, \ldots x_{g+1m}, x_{1k}, \ldots x_{gk}), \ldots U_n(x_{n1}, \ldots x_{nm}, x_{1k}, \ldots x_{gk})]$$

$$(7) \qquad \frac{\partial U_i}{\partial x_{fk}} > 0 \qquad \frac{\partial^2 U_i}{\partial^2 x_{fk}} < 0 \qquad \begin{matrix} i > g \\ f \leq n \end{matrix}$$

of each separate recipient, and any increase raises the donor's utility although at a diminishing marginal rate. Further assume that there is only one instrument available to the public sector: it may establish an in-kind transfer to the g recipients by setting a price of housing below the original market price, which is financed by a linear income tax on the n-g donors. The difference between the producer price of housing and the consumer price is t_k. The producer price is normalized at one so the consumer price of housing is $1-t_k$. The income tax paid by the household is $a-bp_{i1}x_{i1}$ where p_{i1} is the wage rate of the ith household and x_{i1} is their hours of work measured negatively $(0<|x_{i1}|<24)$.[12] The housing assistance program must be financed, constraining the government to satisfy equation (8). All the individuals in the economy are maximizing their utility functions subject to their budget constraints (9).

$$(8) \quad \sum_{i=1}^{g} t_k x_{ik} = \sum_{i=g+1}^{n} (a - b\, p_{i1}x_{i1})$$

$$(9) \quad \begin{array}{l} i < g \text{ maximize } U_i = U_i\,(x_{i1}, \ldots x_{im}) \\ \qquad \text{subject to } (1-t_k)x_{ik} + \displaystyle\sum_{\substack{j=2 \\ j\neq k}}^{m} p_j x_{ij} = -p_{i1}x_{i1} \\ i > g \text{ maximize } U_i = U_i\,(x_{i1}, \ldots, x_{im}, x_{1k}, \ldots x_{gk}) \\ \qquad \text{subject to } \displaystyle\sum_{j=2}^{m} p_j x_{ij} = -p_{i1}x_{i1} - (a - b\, p_{i1}x_{i1}) \end{array}$$

This formulation assumes that all wage rates and producer prices are unchanged by the housing assistance program, a highly unrealistic proposition. It is equivalent to assuming constant returns to scale in all sectors. To relax the assumption further complicates the formal analysis, although the implications will be discussed in general terms below.[13]

The government, therefore, chooses t_k, a and b to maximize social welfare subject to the budget constraint and the utility maximizing behavior of individuals. Establishing the Lagrangian function (10) the first order conditions are (11).

$$\begin{aligned} \text{(10)} \quad L = {} & W[U_1(x_{11}, \ldots x_{1m}), \ldots U_g(x_{g1}, \ldots x_{gm}), U_{g+1}(x_{g+11}, \\ & \ldots x_{g+1m}, x_{1k}, \ldots x_{gk}), \ldots U_n(x_{n1}, \ldots x_{nm}, x_{1k}, \\ & \ldots x_{gk})] + \lambda \left[\sum_{i=1}^{g} t_k x_{ik} - \sum_{i=g+1}^{n} (a - bp_{i1} x_{i1}) \right] \end{aligned}$$

$$\sum_{i=1}^{g} \sum_{j=1}^{m} \frac{\partial W}{\partial U_i} \cdot \frac{\partial U_i}{\partial x_{ij}} \cdot \frac{\partial x_{ij}}{\partial t_k} + \sum_{i=g+1}^{n} \sum_{f=1}^{g} \frac{\partial W}{\partial U_i} \cdot \frac{\partial U_i}{\partial x_{fk}} \cdot \frac{\partial x_{fk}}{\partial t_k}$$

$$+ \sum_{i=g+1}^{n} \sum_{j=1}^{m} \sum_{f=1}^{g} \frac{\partial W}{\partial U_i} \cdot \frac{\partial U_i}{\partial x_{ij}} \cdot \frac{\partial x_{ij}}{\partial x_{fk}} \cdot \frac{\partial x_{fk}}{\partial t_k}$$

$$+ \lambda \left[\sum_{i=1}^{g} x_{ik} + \sum_{i=1}^{g} t_k \frac{\partial x_{ik}}{\partial t_k} \right] + \lambda \left[\sum_{i=g+1}^{n} \sum_{f=1}^{g} bp_{i1} \frac{\partial x_{i1}}{\partial x_{fk}} \cdot \frac{\partial x_{fk}}{\partial t_k} \right] = 0$$

$$\text{(11)} \quad \sum_{i=g+1}^{n} \sum_{j=1}^{m} \frac{\partial W}{\partial U_i} \cdot \frac{\partial U_i}{\partial x_{ij}} \cdot \frac{\partial x_{ij}}{\partial a} - \lambda(n-g) + \lambda \sum_{i=g+1}^{n} bp_{i1} \frac{\partial x_{i1}}{\partial a} = 0$$

$$\sum_{i=g+1}^{n} \sum_{j=1}^{m} \frac{\partial W}{\partial U_i} \cdot \frac{\partial U_i}{\partial x_{ij}} \cdot \frac{\partial x_{ij}}{\partial b} + \lambda \sum_{i=g+1}^{n} \left(p_{i1} x_{i1} + bp_{i1} \frac{\partial x_{i1}}{\partial b} \right) = 0$$

$$\sum_{i=1}^{g} t_k \, x_{ik} - \sum_{i=g+1}^{n} (a - bp_{i1} x_{i1}) = 0$$

With changes in government programs, households remain on their budget constraint (12). These equations together with the first

$$(12)\quad i < g \qquad -x_{ik} + (1-t_k)\frac{\partial x_{ik}}{\partial t_k} + \sum_{\substack{j=2\\ j\neq k}}^{m} p_j \frac{\partial x_{ij}}{\partial t_k} + p_{i1}\frac{\partial x_{i1}}{\partial t_k} = 0$$

order conditions for household utility maximization may be substituted into (11) to yield (13) where μ_i is the Lagrangian multiplier of the ith household. This assumes that the donors'

$$\sum_{i=1}^{g} \frac{\partial W}{\partial U_i}\mu_i \cdot x_{ik} + \sum_{i=g+1}^{n}\sum_{f=1}^{g} \frac{\partial W}{\partial U_i} \cdot \frac{\partial U_i}{\partial x_{fk}} \cdot \frac{\partial x_{fk}}{\partial t_k}$$
$$+ \lambda \sum_{i=1}^{g} (x_{ik} + t_k \frac{\partial x_{ik}}{\partial t_k}) = 0$$

$$(13)\quad \sum_{i=g+1}^{n} \frac{\partial W}{\partial U_i} \cdot \mu_i - \lambda\, [(n-g) - \sum_{i=g+1}^{n} b\, p_{i1} \frac{\partial x_{i1}}{\partial a}] = 0$$

$$\sum_{i=g+1}^{n} \frac{\partial W}{\partial U_i} \cdot \mu_i \cdot p_{i1}x_{i1} + \lambda\, [\sum_{i=g+1}^{n} (p_{i1}x_{i1} + bp_{i1}\frac{\partial x_{i1}}{\partial b})] = 0$$

utility functions are separable between own consumption and recipient housing consumption ($\frac{\partial x_{ij}}{\partial x_{fk}} = 0 \quad i>g,\ f<g$).

The optimal housing assistance and financing package are to be found by solving the equations (13) for t_k, a and b. The solution is not self-evident and will be sensitive to the specification of the utility functions and the social welfare function. However, the purpose in presenting this example is not to derive and analyse the solution but rather to illustrate how properly to solve an optimal instruments problem and to identify the critical parameters which shape the solution.

In moving from the two household to the n household example, several additional issues arise. The g recipients are not identical and would have been consuming different amounts of housing services in the absence of a government program. Assuming that the optimal instrument is a price reduction subsidy, the percentage price reduction offered each household at the optimum will be different (Hillman, 1980 and Roskamp, 1975).[14] The above example restricted the government to a program offering a similar price reduction for all households. The g+1 to n donor households are also different and pay different amounts of tax depending on their income (the product of their wage rate and their hours of work). This is not a lump sum tax but a tax which distorts the rate of substitution between work and leisure. It will have efficiency costs compared to the hypothetical lump sum tax. The wage elasticity of labour supply will therefore influence the aggregate size of the housing assistance plan.

The specification of the n-household example continued the assumption that commodity and factor prices were unchanged (or that all supply curves were perfectly elastic). This is unlikely to be true in reality. A tax-financed program to reduce the price of housing for certain households will not increase total housing consumption by the amount of the increase of the recipients, because that will be offset by the decline among taxpayers; but, on balance, resources will be drawn into the housing sector. This will set off a complex chain of factor and commodity price changes, influencing households' well-being on both the sources of income and uses of income sides of their budgets. All the utility changes which follow must be included in any decision about the optimal instrument. Probably the Harberger (1962) general equilibrium framework is the most appropriate method of analysing these changes. Aaron (1972) discusses in qualitative terms the influence of a universal housing subsidy and Ballentine and Thirsk (1978) have produced quantitative estimates of the incidence of an increase in the federal personal income tax to finance a general subsidy on housing services. They found that such a program would increase the return to capital and land, factors owned more by the wealthy, but this was more than offset by the progressive financing and the reduction in house prices which is especially favourable to the poor. The net effect is a significant redistribution of real income from those earning above $9,000 annually (in 1969) to those earning less than that.

The solution of the n-household general equilibrium problem cannot yet be derived analytically and even numerical solutions to given social welfare and utility functions remain to be produced.

However, the sorts of examples discussed here and analogous work on the design of an optimal tax system (good surveys are available in Sandmo (1976) and Boadway (1979)) reveal some of the critical parameters. On *a priori* grounds, one cannot prove that a housing assistance program to raise the housing consumption of certain households should use a price reduction strategy rather than a cash grant strategy. However, the more price inelastic the demand for housing, the less income elastic the demand, the greater the utility gain from the consumption externality or the donor preference, the greater the social welfare function's valuation of increased consumption of the merit good housing, and the more the social welfare function tolerates inequality, the more likely that the optimal strategy is to reduce prices to specific households. On balance, price reduction is probably the optimal strategy in Canada, because housing elasticities are low and we seem willing to tolerate considerable inequality. However, a firm conclusion awaits solution of the general optimal instruments problem. It should be remembered that the justification for the program is the need to raise housing consumption to adequate levels, not, to raise incomes or utility levels. The latter rationale is dealt with in the next section. As well, the problem when both increased housing consumption and income redistribution are called for is discussed.

Given that the underconsumption of housing is to be dealt with by a price reduction, there are three main approaches which can be followed. One is to construct new buildings and sell or rent them at less than market prices. A second is to subsidize the consumption of existing housing by certain designated households, usually called a shelter allowance approach. The third is to subsidize the renovations of certain owner-occupied houses, and of certain rented buildings coupled with controls on the rent of that unit. Each will be discussed in more detail below. None of them, on first glance, seems to require mortgage lending by the public sector. A mortgage loan, public or private, insured or uninsured, may be involved but the central issue is how to deliver the subsidy to reduce the price of housing.

The new construction approach can deal with either owned or rented housing. With rental, new buildings are constructed and rented to eligible households at less than market rates. The buildings are usually publicly owned (what is termed public housing) but could conceivably be owned by non-profit groups, co-operatives or even private entrepreneurs. The construction can be financed either through public or private sector mortgage loans. The difference between economic costs of operating and rents received must be covered in some way, with different systems offering quite different incentives to the operator of the building. The entire operating difference might be covered, or an annual grant given or the mortgage interest rate might be reduced. A similar approach could be followed in the ownership market with some form of subsidy of the annual economic costs of ownership. A possible alternative policy would be to sell new houses at less than market price which would be analogous to a lump sum grant;

but this would not guarantee an increase in housing consumption because the recipient could sell the house, in effect taking the assistance as an increase in wealth, and consume less housing elsewhere.

New construction programs, especially public housing, have been criticized on numerous grounds (see O.E.C. (1976) for a summary discussion), but they all have a fundamental flaw: they raise the level of housing consumption above the likely threshold level[15] where consumption externalities or donor preferences operate or where social welfare increases from consumption of a merit good. New housing built to conform to current building codes yields a very high quantity of housing services per dwelling unit. While perhaps theoretically possible, it is not practically possible to build new housing which would just meet society's standard of adequacy. The housing units which do provide this threshold level are older housing units. A dwelling unit yields fewer services per year as it deteriorates through use and perhaps becomes stylistically obsolete (although well maintained houses in certain neighbourhoods may gain in real value with age). New construction programs are very blunt instruments because they raise housing consumption well above that required by the original justification for the assistance. There are clearly better methods of dealing with underconsumption.

It is sometimes suggested that a subsidy to all new construction reduces the price of housing to low income households through the filtering process. The additional new housing is occupied by middle and upper income families; their previous houses are occupied by slightly lower income groups and so on with eventual price reductions on the lowest quality housing. If this process indeed occurs, new construction subsidies are unlikely to be the optimal policy for underconsumption of housing because prices are reduced for many households already consuming enough housing. Further, recent research casts doubt on whether the filtering process works as described. Sweeney (1974) showed that a subsidy to certain types of new construction can raise prices on low quality housing.

The second approach to price reduction is to use a shelter allowance. In its purest form, households which underconsume housing are offered an assistance payment equal to some percentage of their rent payments or owernship costs (defined to include all economic costs including the opportunity cost of equity). The effect is to reduce the price of housing services to the household. Another variant is to give an assistance payment equal to the difference between the rent (or cost) of a minimum acceptable unit and 25 per cent of the recipient's income, contingent on the household occupying a unit of at least this rent or at least a minimum standard unit. Without this constraint, the payment would be equivalent to an income transfer. The details of alternative shelter allowances need not be explored fully here, (see Steele (1981) for a description) because none would entail mortgage market interventions.

All shelter allowance schemes regardless of form have certain advantages and disadvantages. All permit recipients to choose their own housing unit and form of tenure and therefore respect consumer sovereignty. They do not restrict mobility, nor lead necessarily to concentrations of assisted households in one apartment building or neighbourhood. However, shelter allowances reduce the price of all housing consumed by the household not just of the marginal increase and can be costly. Further if the supply of housing of the quality sought by recipients is extremely inelastic, large subsidies are required to increase housing consumption and many of the benefits of the program accrue to owners of rental housing units. Complementary policies to increase the supply elasticity, for example easing bylaws governing conversions of dwellings from singles to multiples and governing the mixing of single and multiple buildings in a neighbourhood, could be mounted to mitigate somewhat this problem.

The final approach to increasing housing consumption through price reduction is to subsidize rehabilitation or renovation of substandard housing units to bring them up to the socially acceptable standards. For owner-occupied dwellings, a grant equal to some fraction of total renovation costs could be provided or annual assistance to defray the cost of the financing loan, likely secured as a mortgage on the house. Annual assistance is probably a preferable system because it ensures that housing consumption of the recipient does in fact increase. It cannot easily be converted to cash as can a grant. If a grant were secured as a mortgage or lien on a house payable on sale, this problem could be avoided. Similarly annual assistance on a mortgage loan to rehabilitate rental units could be offered. The rents on the renovated units would have to be regulated so that the benefits flowed to the tenants; although nominal rents would rise to amortize the landlord's share of the renovation expenses. The rental program could not guarantee that those tenants originally occupying the substandard unit would continue to do so after rehabilitation. A rental renovation program will reduce the price per unit of housing services but also increase the number of units of housing service in the apartment and therefore nominal rents will rise, unless one hundred per cent of the renovation costs were subsidized. The tenant may find it preferable to live in an unsubsidized unit. The larger the portion of the renovation financed by the landlord the more likely that the tenant will move.

The choice between public mortgage loans and private mortgage loans under a rehabilitation program will be governed by the resource costs of running the two (see Fried (1980) for a general discussion of this issue). The government will assume the risk under both, either by making the loan itself or by guaranteeing a private loan explicitly or implicitly by subsidizing the payment of an insurance premium. The effects on private lender portfolios will be roughly similar: under one, intermediaries increase their holdings of government bonds and under the other they increase their holdings of insured or government guaranteed mortgages.

However these are not identical financial assets and intermediaries may be more willing to take on the former especially if there are economies of scale in assessing and acquiring assets. The use of private loans may increase the cost of processing a given renovation program because both the public sector and the private lender will undertake an assessment of the credit worthiness of the borrower. Despite the government guarantee, private lenders face significant costs of relending their funds in case of default. (This is important co-insurance which reduces the possibility of private lenders permitting suboptimal default levels.) However, these cost differences my be offset by greater efficiency in the private sector in processing loans, especially given their large network of branch banks. On balance, there seems no strong case for using either public or private mortgage funds.[16]

Among the three approaches to providing housing assistance, shelter allowances and rehabilitation programs clearly dominate new construction programs. The choice between these two, however, is not so clearcut. Renovation programs respect consumer sovereignty and permit mobility but not nearly to the same extent as shelter allowances. Renovation programs at their inception have the advantage of operating truly at the margin - they reduce the price only of the extra housing consumed by households. Over time as the existence of renovation subsidies is incorporated into home purchase and renting decisions, this advantage is lost. In markets where the supply of minimum standard housing is extremely inelastic, shelter allowances may increase the incomes of landlords rather than the housing consumption of tenants. This can be avoided using renovation assistance. The resource costs of operating each program, holding constant the level of assistance, are not presently known but it is unlikely that they are significantly different.

In summary neither the shelter allowance approach nor the renovation assistance approach completely dominates the other.[17] Except in markets with inelastic supply, shelter allowances seem preferable. Where supply is inelastic, a combination of the two programs may be the optimal policy. In any case, the optimal response to underconsumption of housing is to provide an ongoing subsidy to reduce the price of housing services. Where renovation assistance is provided, there is no necessity of public sector lending although either a subsidy of the private mortgage insurance premium or a public sector loan guarantee will be required.

Income Redistribution

Neoclassical welfare economics grants the important role to government of reducing the utility level of one household to raise the utility level of another when the social welfare function indicates there is a net benefit. Usually this is referred to as the responsibility for income redistribution, although it is more precisely utility redistribution. Redistribution can be effected in any number of ways. The most important general approaches, when increasing utility, are either to reduce the commodity prices faced by a household or to increase the income earned by a household usually through a cash grant although increasing factor prices may also be utilized.[18] The reverse changes are made when reducing utility.

These are the same two approaches which were discussed in dealing with the underconsumption of housing services. Although the problems are fundamentally different, in one housing consumption is to be increased, in the other utility is to be increased, the logic involved in choosing an optimal instrument is very similar to the previous discussion and therefore can be dealt with more compactly.

Again, the problem is to maximize social welfare given that changes in utility levels will increase social welfare. In a simple two person world in which one person is to receive assistance and one is to finance the transfer, it can be easily shown that a lump sum cash grant can raise the utility of a recipient more than an equal cost assistance program which reduces commodity prices. Similarly it can be shown that a lump sum tax reduces the taxpayer's utility less than an excise tax raising an equal amount of revenue. The optimal tax-transfer system should use lump sum grants and taxes, continuing until the marginal social welfare gain of a dollar to the recipient equals the marginal social welfare loss of a dollar from the taxpayer (assuming total income is not reduced by the transfer system) With a utilitarian social welfare function, identical utility functions and declining marginal utility of income this would imply complete equality of incomes. Different social welfare and utility functions would establish different levels of taxes and transfers but lump sum payments would always be used.

However, in a world of more than one donor or more than one recipient, and in which households are heterogeneous, a lump sum tax-transfer system is no longer a realistic way to redistribute income. A larger payment will be given to poorer households and therefore will influence the rate of substitution between income and leisure available to a household. Similarly the taxes will not be lump sum but income taxes and so influence the substitution between income and leisure.

Atkinson and Stiglitz (1976) examine the optimal taxation problem and Fallis (1981) examines the analogous optimal distribution problem. The dominance of an income-based tax-transfer system cannot be established except when commodities and leisure are separable in the utility function.

The solution to this optimal instrument problem would proceed as laid out in the previous section on housing underconsumption. The government would choose optimal parameters of any instrument and compare the level of social welfare achieved under each instrument. Recognition would have to be taken of the general equilibrium effects of any assistance program on all commodity and factor prices (Ballentine and Thirsk (1978) conduct simulation experiments of various tax-transfer systems). Further the decision should explicitly include resource costs of administering the tax-transfer system. If administration costs are a function not only of the number of households assisted and the level of assistance but also the number of commodities which are subsidized, the likelihood of an income-based system being optimal would increase.

Although there is no argument in economic theory showing cash transfers will always yield a higher level of social welfare than in-kind transfers, the theory does suggest that the burden of proof should lie on those who wish to include in-kind transfers as an instrument of income redistribution. Until further theoretical and empirical work has been completed which proves the case, housing assistance should not be used for income redistribution. Therefore, there will be no need for mortgage market intervention in pursuit of the objective.

The discussion so far has dealt separately with the problems of income redistribution and the underconsumption of housing. The income distribution section assumed there was no underconsumption of housing; that any increase in housing consumption increased social welfare only because the utility of the consuming household rose. The public policy problem was to change utility levels. The underconsumption of housing section focused on raising housing consumption which would increase social welfare by increasing the utility of the consuming household and by raising the utilities of those experiencing the externality, or the donors of the money or because housing is a merit good. The issue of income distribution could not be ignored altogether because the social welfare function weighted the changes in utility, but a proper independent treatment of the problem would assume a roughly optimal distribution of income before the housing assistance program is mounted (see note 10). In reality however, both problems are likely to occur simultaneously. Low income households consume few units of housing services. An increase in their housing consumption would yield social welfare gains beyond their utility gain, but at the same time the optimal distribution of income indicates resources should be shifted to them. If their incomes were increased they would also consume more housing services. The problem for government is to deal simultaneously with the two rationales for intervention. This can be formally specified exactly as the underconsumption of housing problem in the previous section assuming that a dollar to the poor yields a greater social welfare gain than a dollar to the rich.

If, when the distribution of income is optimal, households consume more than an adequate quantity of housing services, then government need focus only on the income distribution problem. When it is solved there will be no underconsumption of housing services. This seems more likely to be the case the richer is a country, and probably holds true in Canada.

However, if society wishes to have a more equal distribution of housing consumption than of income, there will still be underconsumption of housing when income is fairly divided. There remains two problems to deal with and both a price reduction and income support program will likely be called for.

In the analysis of the underconsumption of housing and income distribution problems, a critical issue is the nature of the social welfare function. It has been stated several times that the function cannot be directly observed and that evidence about its form is hard to obtain and interpret. Any policy recommendation therefore will always be vulnerable to criticism based on an alternative social welfare function. Nevertheless, the examination of the theory and evidence in this chapter suggests the principal issue in Canada is income distribution and if that were solved there would not be underconsumption of housing. The optimal income redistribution policy is not a housing assistance program. In some regions or for some households optimality may require a housing assistance program. This is best provided by a shelter allowance or renovation assistance. The latter might involve either public mortgage lending or mortgage guarantees. But major mortgage market interventions by governments are not called for to deal with either housing underconsumption or income distribution.

Stabilization of the Economy

There can be no dispute that national income, employment and prices have shown considerable instability during the post-war period in Canada. There does, however, exist debate about the fundamental causes of these fluctuations and the efficacy of using government policy to reduce them, between the two principal competing viewpoints often labelled monetarist and neo-Keynesian.[19] The monetarists grant little role for discretionary stabilization policy while the neo-Keynesians recommend a more activist government. They differ, therefore, in whether fluctuations might rationalize public involvement in mortgage markets.

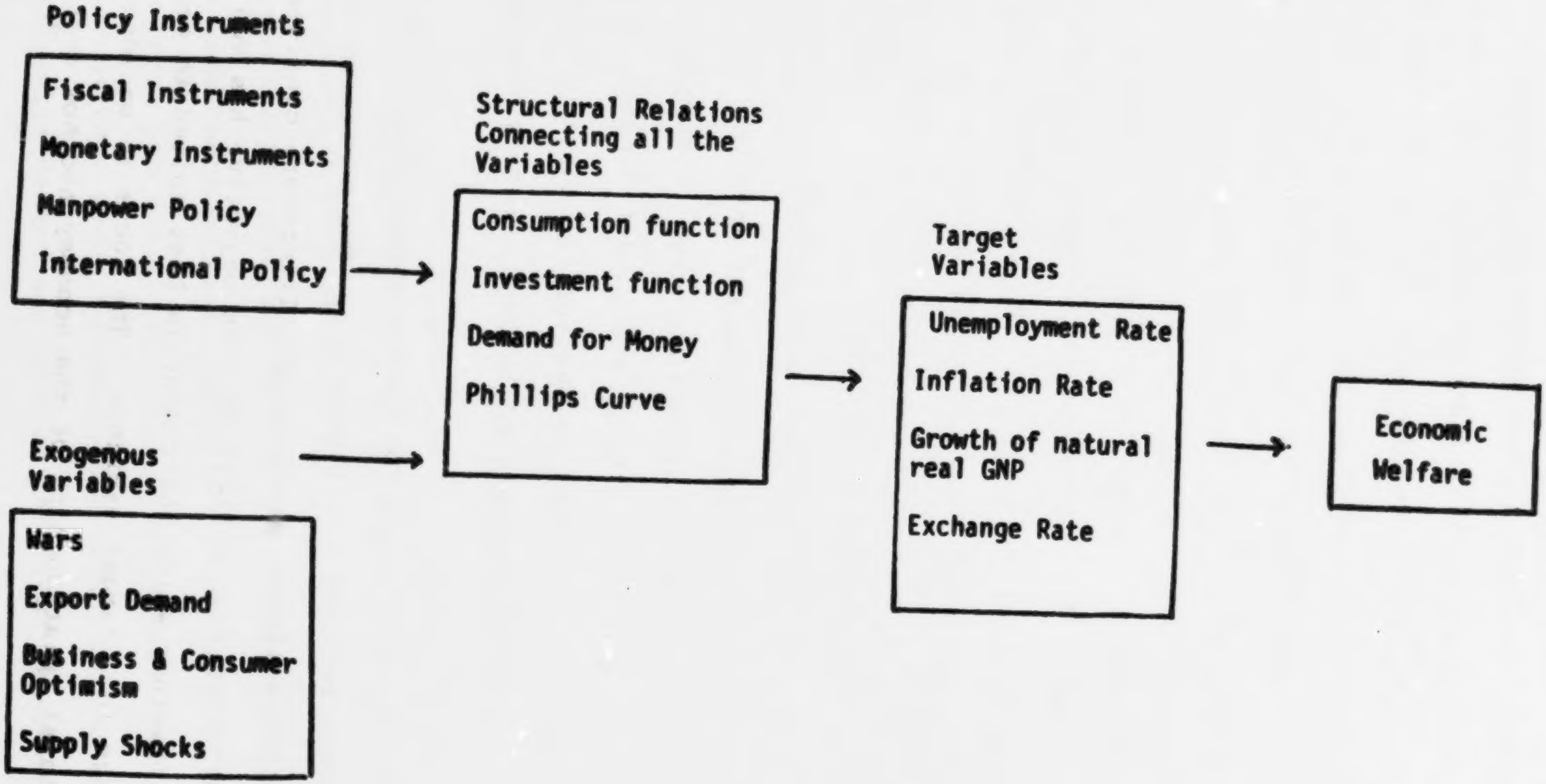
There are two variants of the monetarist position, both of which lead to the same conclusion about stabilization policy (Gordon, 1981). The free market economy is held to be stable or at least to be self-stabilizing so that it naturally tends toward a relatively stable price level and full employment. There is no need for the public sector to engage in the management of aggregate demand; indeed much of the instability of the post-war period has been caused by government policies. An alternative monetarist view accepts that shifts in private consumer spending and business investment do cause instability but because monetary policy is powerful and fiscal policy relatively weak, because we lack precise knowledge about the magnitude and timing of their effects on aggregate demand and because political decisonmakers tend to overreact, the most prudent course for government is not to engage in discretionary stabilization policy. If either variant is accepted, the discussion need not proceed further. There is no role for government in the mortgage market in order to stabilize the economy. Any attempts to regularly intervene would make things worse.[20]

The neo-Keynesians deny that the free market is stable, or self-regulating or that our knowledge of the economy is so sketchy as to rule out countercyclical policies. While perhaps unable to reach agreement about the relative effectiveness of various instruments, they agree that unemployment or inflation can be counteracted by government policy. The question becomes which instrument to use in stabilization policy. The previous chapter identified two cases where mortgage market interventions might be considered as an instrument: direct mortgage lending might be used as part of an expansionary policy; and direct lending or selective credit controls might be used to shelter the housing sector when a restrictive policy is implemented through monetary restraint.

The choice of instruments for macroeconomic stabilization can be discussed with reference to Figure 3-1. The objective of policy is to increase welfare. The economic literature considering optimal instruments in pursuit of this objective has two strands. The first examines which instrument is best suited to achieve a given change in a target variable. The focus is on identifying the structural relationships of the economy and how certain

Figure 3-1

The Theory of Macroeconomic Policy


Policy Instruments
Fiscal Instruments
Monetary Instruments
Manpower Policy
International Policy
Exogenous Variables
Wars
Export Demand
Business & Consumer Optimism
Supply Shocks
Structural Relations Connecting all the Variables
Consumption function
Investment function
Demand for Money
Phillips Curve
Target Variables
Unemployment Rate
Inflation Rate
Growth of natural real GNP
Exchange Rate
Economic Welfare

Source: based on Gordon (1981)

relationships imply choosing a specific instrument. The second examines the welfare costs and income distributional implications of levels of the target variables. These are used to analyse the more desirable configuration of the target variables because tradeoffs must inevitably be made. Uniting the two strands and judging alternative states of the world according to the social welfare function would constitute a fully general approach to the choice of optimal instruments. Such a synthesis is a long way off but the following discussion attempts to follow its spirit.

Direct lending to increase aggregate demand is, somewhat though not perfectly, analogous to government expenditures on goods and services. Unlike such spending, loans do not generate income directly but depend on the actions of the borrower. Further, there are interest payments and principal repayments from the borrower to the government. Like other government spending, loan programs must be financed either by the creation of new money, borrowing from private money markets, increased taxes or reduced expenditure.

Direct lending programs generate a flow of funds to the private sector, ignoring for the moment the financing, equal to loans less repayments, plus administration expenses less interest charges, plus net flows from default proceedings (Break, 1965).[21] The major determinant of how much this increases aggregate demand in the first round is what the borrower would have done in the absence of the government program. If the borrower could not have obtained credit, and uses the loan proceeds to purchase new goods and services, aggregate demand in the first round will increase by the full amount of the loan. If the borrower would have obtained private funds, then the issue becomes how the private funds which the borrower would have used are disposed of. Probably, the expansion is less than the full loan amount in this case.

The financing will have offsetting first round effects on aggregate demand. New money will have no direct offset but the price and interest rate changes will produce offsets; taxes reduce spending by less than the reduction in income; expenditure cuts may fully offset or even cause aggregate demand to fall; and borrowing will have an effect depending on how much interest rates rise and reduce private investment and consumption. Some would argue that the 'crowding out' effect will fully offset the loan-induced expenditures and thus public lending has no use as a stabilization device.

Assuming some form of stimulative fiscal policy were desired, a number of issues govern whether expenditure changes, or tax changes, or direct lending will be the optimal government policy. The lags between recognition of the need for stimulus and the change in target variables are important, with shorter lags being more desirable because there is less likelihood that economic conditions will have changed between decision and effect. Public mortgage lending would have a similar legislative lag to other fiscal instruments (although longer than monetary instruments) but would influence aggregate demand more rapidly than many public spending projects (and less rapidly than personal tax changes). Private builders usually have a 'shelf' of ready projects and resources move relatively easily into the housing sector. Another criterion is efficiency, defined as extra dollars of nominal GNP per dollar of deficit. The high interest elasticity of housing construction suggests mortgage programs would be relatively efficient, but against this must be set the substitution of public for private funds which occurs. Housing investment has relatively low leakages of first round expenditure into imports, and the dollar of deficit has no leakage into savings as does a personal or corporate income tax cut. Reversibility is also a desirable quality of any fiscal instrument. Public lending programs, which finance capital expenditure, seem more reversible than tax changes, which finance current expenditure and often create a constituency favouring the continuation. Mortgage lending programs can be used for the application and removal of stimulus but not for restraint which would require raising the cost of mortgage funds.

Fiscal instruments also differ in their locational and sectoral impacts. If all locations and markets always exhibited the same degree of excess supply or excess demand (after standardizing for structural differences), the specific impact of fiscal policy would not matter. However regions and more especially product and input markets do not all move together. When the national economy is contracting or growing more slowly and there is downward pressure on the rate of price change, individual industrial sectors may be expanding, stable or contracting; or experiencing rising, stable or declining prices. Fixed capital and certain types of labour are relatively immobile between sectors in the short run and so different sectors may exhibit considerable differences in excess capacity. Fiscal stimulus might yield the largest output increase for a given increase in prices if the initial stimulus were applied in markets with falling prices or prices which have been rising at a less rapid rate over time. This assertion seems plausible but there is little empirical evidence to verify it. Alternatively, stimulus could be applied to the sector, like housing, into which resources move easily and thus will be less likely to raise prices. In any event some choice must be made because stimulus cannot be evenly applied across all sectors in the first round.

Another issue influencing the choice of direct mortgage lending as an instrument of stimulus will be whether it increases or decreases the housing fluctuations. If the housing and business cycles are in phase, a direct mortgage lending program would reduce fluctuations in the housing cycle and tend to reduce long run average costs. However if the cycles were out of phase, long run average costs might be increased.

A final criterion is the income redistribution from a fiscal instrument. In the short run, a stimulative mortgage program for rental construction likely increases the welfare of existing renters, and reduces the welfare of existing landlords while a lending program for home purchasers increases the welfare of buyers and existing homeowners. Both programs increase the welfare of the owners of factors specific to the housing industry. The pattern is probably slightly progressive but neither recommends nor rejects a mortgage instrument.

On balance, an intervention in the mortgage market might be the optimal instrument of a stimulative fiscal policy, if at the time stimulus was required housing was a particularly depressed sector.

The other possibility, one which has been suggested for the situation in the early 1980's in Canada, and the United States, is to use a mortgage market intervention in conjunction with monetary restraint. When monetary policy is restrictive and raises interest rates, new construction declines more than output in other sectors because of its higher interest elasticity. The arguments that an optimal monetary policy would combine general restraint with offsetting policies to shelter the mortgage market are several. Politically, the necessary restraint will be more acceptable if it is borne more evenly across sectors. The monetary package of restraint with housing offsets may be more efficient in the sense of achieving a given reduction in the general price level at less loss of real output. In the initial stages of restraint this is not likely the case because the logic which suggested a sectorally specific fiscal policy to stimulate housing would recommend that restraint be applied to housing. However, if restraint is persistent, the remaining inputs may not leave easily. An efficient policy may call for offsets at some point. Again evidence is lacking to assess the optimality of such a policy. As noted above, the distributional considerations are not likely relevant.

The recommendations of economists differ. Maisel (1979) favours the policy; Smith (1978, 45) recommends it only to offset 'severe contractions in residential construction when general stabilization requirements dictate extremely tight or prolonged monetary restriction' such as to protect the floating exchange rate; while Brunner (1975, 5) concludes 'credit controls are a singularly useless device to curb inflation.' The prudent conclusion is that mortgage lending programs should be retained as an instrument for use, not in fine-tuning but rather to deal with prolonged and escalating monetary restraint.

Concluding Comments

The purpose of this discussion paper has been to explore what role the government ought to play in residential mortgage markets. The approach adopted was that of welfare economics. At the outset, the values or objectives of government were discussed and then in what followed it was assumed that governments sought an efficient and equitable allocation of resources or, more generally, sought to maximize the social welfare function.

Alluding to the fundamental theorems of welfare economics, it was argued that the social welfare maximum could be achieved without any government intervention provided that a list of eight conditions was fulfilled. If one of the conditions is not fulfilled, there exists the possibility that a government intervention can raise the level of social welfare. The list therefore provides a framework for exploring what role the government ought to play in residential mortgage markets. First each item on the list was examined to see whether it applied in housing matters. This was done in Chapter 2. The second step was to examine more closely what would be the optimal government program in cases where government intervention seemed warranted. This was done in Chapter 3.

This application of welfare economics suggested that a government presence in residential mortgage markets is required but more as an overseer and participant in certain specific and limited circumstances rather than on a continuing basis. Public mortgage insurance or re-insurance probably should be continued and public mortgage lending should be an available instrument to use when private lenders cannot pool high risk loans, or have incorrect information; or as part of a renovation assistance program; or when appropriate as part of a stimulative fiscal policy or to offset prolonged and escalating monetary restraint.

The analysis thus characterized the broad patterns of the role the government should play in residential mortgage markets, rather than identifying definitive and specific programs. Nevertheless the logic which would be used to design a specific program was clearly laid out. This discussion paper did not deal with the existing government involvement in residential mortgage markets. This is examined in a companion discussion paper - Governments and the Residential Mortgage Market II: Programs and Evaluation (Fallis, 1983b). The interventions of the federal and provincial governments are there outlined and the actual involvement is compared with the recommendations of welfare economics from this discussion paper. Together, the two discussion papers form a more complete look at governments and the residential mortgage market.

Chapter 3 - Notes

1 The recipient of a public loan would have received an unintended subsidy.

2 If government were to intervene, it would likely set up an agency which would be financed by borrowing from the parent government. The interest rate charged would be too low for the agency considered alone but compensatory to its parent. This is not a case of subsidizing individual borrowers although it involves a subsidy to the agency which serves them. I am grateful to a referee for this point.

3 Major financial intermediaries would probably only make insured loans. A doubling of the insurance premium from one to two per cent of the loan is equivalent to a .8 per cent increase in the price of a house (assuming an 80 per cent loan-to-value ratio). If the price elasticity of housing demand is minus one and insurance demand is directly proportional to housing demand, the premium elasticity of mortgage insurance would be approximately minus .008; a highly inelastic demand. However, on standard sorts of mortgages, large institutions can undertake self-insurance and the demand for private mortgage insurance would thus be much more elastic.

4 The resource costs of establishing a separate, more stringent system of regulation to deal with mortgage insurance would likely be greater than the benefits.

5 In choosing, there is no preference for public versus private decisionmaking. As was pointed out in Chapter 2, the social welfare function does not involve the form of economic organization as a criterion.

6 For a further discussion of the problems of housing adequacy and affordability see Fallis (1983a).

7 Other approaches are certainly possible. One important alternative is to reduce the price of housing services for all rather than for specific households. Assuming that those who underconsume housing before the intervention of government are a relatively small percentage of the total population, this is unlikely to be the best approach. However, in certain cases, a modified sort of general price reduction might be optimal. If, for example, a large majority of a community undercomsumed housing, a general subsidy to reduce prices might be optimal assuming the effects on the spatial allocation of people between communities were small. Or if one type of housing was inhabited mainly by underconsumers, its price might be reduced assuming the

effect on the prices of other types of housing was not significant.

8 The logic is very similar to that used to show a lump sum cash grant costs less than a price reduction to achieve the same utility level. Thurow (1966) advances the argument in the context of intergovernmental grants.

9 Aaron and von Furstenberg (1971) used a CES utility function which implies a unitary income elasticity of demand and a price elasticity which falls in absolute value as the elasticity of substitution falls.

Similar approaches are used in De Salvo (1971) and Murray (1978) in estimating the welfare cost of price reduction policies.

10 This formulation leaves open the question of why the difference in utility levels is tolerated when to equalize them or reduce the difference would increase social welfare. If the weights indicate a great deal of redistribution is called for, this formulation implicitly combines an income redistribution and housing assistance program.

11 The interdependence could take many forms. It might cease after some level of housing consumption, or donors might care about the aggregate housing consumption of the recipients rather than what each consumes.

12 This notation follows that of Sandmo (1976).

13 It is possible that the financing would involve redistribution among the donor group, i.e., some would receive cash transfers, others pay taxes, and the surplus be used to finance the housing assistance. It is assumed that the distribution of income and the social welfare function are such that no intra donor redistribution occurs.

14 Such an individualized in-kind subsidy is certainly possible although is not common in reality.

15 The level of housing services from some new public housing units may appear to be low, but this is because of the neighbourhood effects of a high concentration of people with social problems, not the characteristics of the dwelling unit. It is difficult to know what the threshold level is. The statement in the text takes the threshold to be 'adequate' housing defined as not crowded and with basic plumbing and heating facilities.

16 Some might argue private lenders would more accurately assess the credit worthiness of borrowers and more strictly and accurately apply eligibility standards while others would argue

that they would be too conservative and too strict and implicitly set higher standards than dictated by the public sector which guaranteed the loans.

17 Another possible system of delivering assistance is for the public sector to buy older buildings and rent the units at less than market prices. This seems dominated by a shelter allowance at least in elastically supplied markets, because consumers retain more choice of units and private landlords are likely to be at least as efficient as public landlords.

18 In the longer run, inequality may be reduced by altering factor ownership, for example, by increasing the human capital of a household through training.

19 Labels often serve to provoke articles about 'what is monetarism' rather than helping to distinguish clearly different points of view. However the debate has now proceeded long enough that the labels must be used and, it seems, with some usefulness. The section draws on Gordon (1981), Modigliani (1977), Friedman (1968) and Laidler (1981).

20 A less extreme monetarist position would argue only against attempting to fine tune the economy not against intervention to stabilize pronounced fluctuations. It would also admit to knowledge about the medium and long-run effects of monetary and fiscal policy.

21 After operating for a long time, a lending program may generate no flow.

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POOR

QUALITY

ORIGINAL